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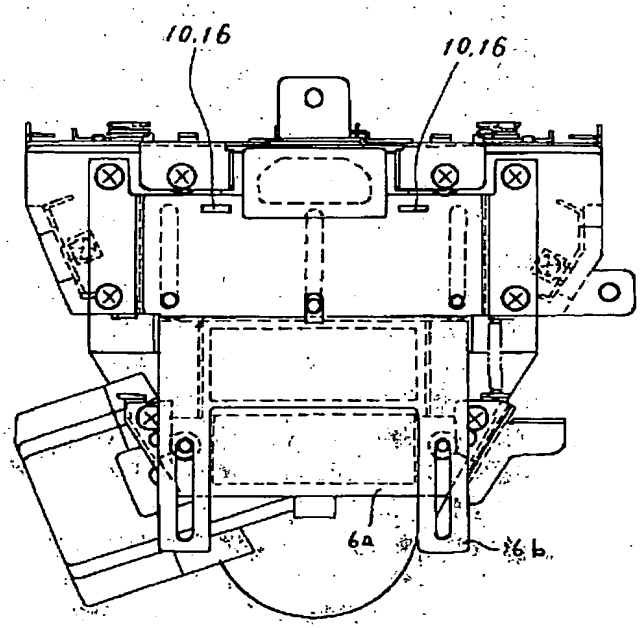
(54)【発明の名称】　プロジェクタ装置およびランプボックス

(57)【要約】
【課題】　ランプボックスがプロジェクタ装置から取り外されているときに、万が一ランプが破損してもランプの破片が通風口から外部に飛散しないランプボックスを備えたプロジェクタ装置を得る。
【解決手段】　筐体と、映像を拡大表示するための光を発するランプ、このランプを固定保持するとともに、風を通すための通風口を有する箱、この箱の上部に設けられ、摺動可能に保持されたシャッター手段とからなる、筐体内のランプ取付け部に取り付けられるランプボックスと、上記筐体のランプ取付け部に装着されたランプボックスのシャッター手段と当接する位置で筐体に設けられた回動部材と、上記筐体のランプ取付け部に取り付けられるときに、上記筐体内に設けられた上記回動部材に当接し、上記回動部材を所定の方向に所定量回動させる凸部を有するランプ取付け部カバーとを備えたことを特徴とするプロジェクタ装置。



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【特許請求の範囲】

【請求項１】　筐体と、

映像を拡大表示するための光を発するランプ、このランプを固定保持するとともに、風を通すための通風口を有する箱、この箱の上部に設けられ、摺動可能に保持されたシャッター手段とからなる、筐体内のランプ取付け部に取り付けられるランプボックスと、

上記筐体のランプ取付け部に装着されたランプボックスのシャッター手段と当接する位置で筐体に設けられた回動部材と、

上記筐体のランプ取付け部に取り付けられるときに、上記筐体内に設けられた上記回動部材に当接し、上記回動部材を所定の方向に所定量回動させる凸部を有するランプ取付け部カバーとを備えたことを特徴とするプロジェクタ装置。

【請求項２】　回動部材は、

ランプ取付け部カバーに設けられた凸部が当接し、回動可能に保持された第１の回動レバーと上記シャッター手段と当接する位置に設けられ、第１の回動レバーの回動に連動して回動する第２の回動レバーとを備えたことを特徴とする請求項１記載のプロジェクタ装置。

【請求項３】　回動部材の回動端に、ランプ取付け部カバーの凸部により回動部材が所定量回動したことを検知する検知スイッチを備えたことを特徴とする請求項１記載のプロジェクタ装置。

【請求項４】　シャッター手段の摺動端に、上記シャッターが回動部材の回動により所定量摺動したことを検知する検知スイッチを設けたことを特徴とする請求項１記載のプロジェクタ装置。

【請求項５】　ランプ取付け部カバーの凸部は、ランプ取付け部カバーの裏面ほぼ全体に取り付けられた板金の端部を折り曲げることにより形成されたことを特徴とする請求項１記載のプロジェクタ装置。

【請求項６】　筐体と、

映像を拡大表示するための光を発するランプ、

このランプを固定保持するとともに、風を通すための通風口を有する箱、

この箱の上部に設けられ、通風口の開閉を行なうために摺動可能に保持されたシャッター手段、

箱の前面下部に設けられ、ランプを固定保持した箱を筐体内に固定するためのロック部材、

ランプを固定保持する箱の下面に設けられた通風口の開閉をするために回動自在に取り付けられた回動蓋とからなる　ランプボックスと、

映像を拡大表示するための光が発せられるランプボックスの面を覆うランプカバーと、

ランプボックスが筐体に装着され、上記ランプカバーがランプボックスから取り外されたときに、上記ロック部材と噛み合うロック受け部とを備えたことを特徴とするプロジェクタ装置。

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【請求項７】　ロック部材は、箱の前面下部で弾性体により一方向に付勢された状態で回動可能に取り付けられたロックレバーからなり、

ランプカバーを箱の前面に取り付けるために、箱に設けられた取付部材と、

ランプカバーは、

ランプカバーの下端に設けられ、箱の下側に設けられた回動蓋の回動軸側の端部に当接するとともに、上記回動蓋を回動させる第１の凸部と、

ランプカバーの下端に設けられ、上記ロックレバーに当接するとともに、上記ロックレバーを回動させる第２の凸部とからなることを特徴とする請求項６記載のプロジェクタ装置。

【請求項８】　シャッター手段は、箱の前面側に穴部を有し、

ランプカバーは、箱の前面を覆うカバー部分の上方に設けられ、上記穴部に係合する爪状部材からなることを特徴とする請求項６記載のプロジェクタ装置。

【請求項９】　ランプカバーは、箱の前面を覆うカバー部分の上方と箱の上部後方とを結ぶような形で設けられた取っ手部を有し、

この取っ手部は、ランプボックスがランプ取付け部に装着されたときに、筐体の上面よりも高い位置にあることを特徴とする請求項６記載のプロジェクタ装置。

【請求項１０】　筐体と、

映像を表示するための光を発するランプ、このランプを固定保持するための箱からなる、筐体内のランプ取付け部に装着されるランプボックスと、

上記筐体内のランプ取付け部を覆うために、上記筐体に取り付けられるランプ取付け部カバーと、

上記箱の上面に設けられ、上記ランプ取付け部カバーが筐体に取り付けられたときに、上記ランプ取付け部の裏側に位置する面とほぼ接するぐらいの高さに形成された第４の凸部を有するホルダーとを備えたことを特徴とするプロジェクタ装置。

【請求項１１】　筐体と、

映像を表示するための光を発するランプ、

このランプを固定保持するとともに、風を通すための通風口を有する箱、

この箱の面には、弾性体により通風口を閉じる方向に付勢されるとともに、回動可能に設けられた回動蓋とからなるランプボックスと、

筐体には、上記ランプボックスが装着されたときに回動蓋に当接し、回動蓋を所定量回動させる突起部が設けられたことを特徴とするプロジェクタ装置。

【請求項１２】　映像を拡大表示するための光を発するランプと、

このランプを固定保持するとともに、風を通すための通風口を有する箱と、

この箱の上部に設けられ、通風口の開閉を行なうために

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摺動可能に保持されたシャッター手段と、
箱の前面下部に設けられ、ランプを固定保持した箱を筐体内に固定するためのロック部材と、
ランプを固定保持する箱の下面に設けられた通風口の開閉をするために回動自在に取り付けられた回動蓋と、
上記シャッタ手段の摺動始端側に設けられた穴部と、
上記箱の前面全体を覆うカバー部、
カバー部の下端に設けられ、上記回動蓋に当接し、回動蓋を閉じる方向に回動させる第１の凸部、
カバー部の下端に設けられ、上記ロック部材と当接し、ロック部材を所定の方向へ回動させる第２の凸部、
カバー部の上方に設けられ、上記シャッター手段に設けられた穴部と係合する爪状部材、
カバー部の上方に一端が設けられ、他端は箱の後方部分に取り付けられる取手部とからなるランプカバーとを備えたことを特徴とするランプボックス。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】この発明は、光源の光で映像を拡大投射するプロジェクタ装置およびプロジェクタ装置に装着されて光源の光を発生するランプボックスに関するものである。

【０００２】

【従来の技術】従来のプロジェクタ装置の光源には、メタルハライドランプ等の放電ランプが用いられている。このランプは、消耗品であるためプロジェクタ装置を使用し続けていく間に交換する必要が生じる。このランプについては従来からも様々な工夫が施されており、例えば実開平３－６２３８７号公報、実開平５－３８６４５号公報および特開平８－３１４０１１号公報などにその一部を見ることができる。

【０００３】図２６は、例えば、実開平５－３８６４５号公報に示されている、従来のランプボックスを液晶プロジェクタから取り出す工程を示す工程図である。図２６に示すように、プロジェクタ装置１の筐体２００には、ランプボックス１００Ｘを収納するための収納部２２０が設けられている。プロジェクタ装置１が通常使用されるときには、筐体２００にランプボックス１００Ｘが装着され、筐体２００の収納部２２０は意匠カバー２１０で蓋をされている。ランプボックス１００Ｘを空冷するために、冷却ファン２７０がランプボックス１００Ｘと一緒に収納部２２０に格納されている。冷却ファン２７０から吹き出す風を外部に逃がすために、例えば意匠カバー２１０には排気口２１１が設けられている。

【０００４】ランプボックス１００Ｘは、その交換のために、筐体２００から取り外すことができるように構成されている。ランプボックス１００Ｘを取り外すときには、図２６（ａ）に示すように、まず意匠カバー２１０を取り外す。次に、図２６（ｂ）に示すように、ランプボックス１００Ｘの取り出しの邪魔にならないように冷却ファン２７０を矢印２３０の向きに移動させて、ランプボックス１００Ｘを矢印２４０の向きに引き出す。新しいランプボックス１００Ｘの装着は上述の取り外しの手順とは逆の手順で行われる。

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【０００５】図２７はプロジェクタ装置の一構成概要を示す略断面図である。ランプボックス１００Ｘには、光源としてのメタルハライドランプ２とメタルハライドランプ２から発せられた光を集光するためのリフレクタ３とが収納されている。ランプボックス１００Ｘから出た光は、コールドミラー２５０で反射されてダイクロイックミラー２５１に導かれる。２つのダイクロイックミラー２５１を用いて、光源からでた光は、赤色、緑色および青色の光に分解される。分解された光は、対応する液晶パネル２５３を通過する。通過する際に３色の光は３枚の液晶パネル２５３からそれぞれに異なる映像情報が与えられる。液晶パネル２５３を通過した３色の光はダイクロイックミラー２５４によって合成される。合成された光は、投写レンズ２６０を通ってスクリーン（図示省略）に映像を拡大投射する。メタルハライドランプ２と投射レンズ２６０の間には、光路の変更のために全反射ミラー２５２，２５５なども設けられる。ランプ点灯中には、メタルハライドランプ２を冷却するため、冷却ファン２７０が作動して風を発生している。この風は、メタルハライドランプ２とリフレクタ３の横を通ってこれらから熱を奪い、ランプボックス１００Ｘの通風口２６Ｘ（図２６（ｂ）参照）から冷却ファン２７０を経て排気口２１１よりプロジェクタ装置１の外に排出される。

【０００６】

【発明が解決しようとする課題】従来のプロジェクタ装置の光源は上記のように内圧の高い放電ランプを含んで構成されるため、ランプボックスの取り外し作業はその取り扱いを熟知しているものに限られ、規定の取り扱いをしていれば技術的な問題は生じない。しかし、近年は高性能化のため、ランプの高輝度化が進み、ワット数も大きく、内圧も高まる傾向にある。万一規定外の取り扱いをしてランプが破裂するなどした場合、通風口から破片が飛散する可能性が生じる。

【０００７】この発明は上記の問題点を解決するためになされたもので、プロジェクタ装置から取り外された状態のランプボックスや交換用のランプボックスなど、ランプボックスがプロジェクタ装置の外に取り出されているときに、ランプが破裂しても、ランプの破片がランプボックスの通風口やランプの光が出ていく窓からランプの破片が飛散しないランプボックスおよびプロジェクタ装置を提供することを目的とする。

【０００８】

【課題を解決するための手段】第１の発明に係るプロジェクタ装置は、筐体と、映像を拡大表示するための光を発するランプ、このランプを固定保持するとともに、風

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を通すための通風口を有する箱、この箱の上部に設けられ、摺動可能に保持されたシャッター手段とからなる、筐体内のランプ取付け部に取り付けられるランプボックスと、上記筐体のランプ取付け部に装着されたランプボックスのシャッター手段と当接する位置で筐体に設けられた回動部材と、上記筐体のランプ取付け部に取り付けられるときに、上記筐体内に設けられた上記回動部材に当接し、上記回動部材を所定の方向に所定量回動させる凸部を有するランプ取付け部カバーとを備えたものである。

【０００９】第２の発明に係るプロジェクタ装置において、回動部材は、ランプ取付け部カバーに設けられた凸部が当接し、回動可能に保持された第１の回動レバーと、上記シャッター手段と当接する位置に設けられ、第１の回動レバーの回動に連動して回動する第２の回動レバーとを備えたものである。

【００１０】第３の発明に係るプロジェクタ装置は、回動部材の回動端に、ランプ取付け部カバーの凸部により回動部材が所定量回動したことを検知する検知スイッチを備えたものである。

【００１１】第４の発明に係るプロジェクタ装置は、シャッター手段の摺動端に、上記シャッターが回動部材の回動により所定量摺動したことを検知する検知スイッチを備えたものである。

【００１２】第５の発明に係るプロジェクタ装置において、ランプ取付け部カバーの凸部は、ランプ取付け部カバーの裏面ほぼ全体に取り付けられた板金の端部を折り曲げることにより形成されたものである。

【００１３】第６の発明に係るプロジェクタ装置は、筐体と、映像を拡大表示するための光を発するランプ、このランプを固定保持するとともに、風を通すための通風口を有する箱、この箱の上部に設けられ、通風口の開閉を行なうために摺動可能に保持されたシャッター手段、箱の前面下部に設けられ、ランプを固定保持した箱を筐体内に固定するためのロック部材、ランプを固定保持する箱の下面に設けられた通風口の開閉をするために回動自在に取り付けられた回動蓋とからなるランプボックスと、映像を拡大表示するための光が発せられるランプボックスの面を覆うランプカバーと、ランプボックスが筐体に装着され、上記ランプカバーがランプボックスから取り外されたときに、上記ロック部材と噛み合うロック受け部とを備えたものである。

【００１４】第７の発明に係るプロジェクタ装置において、ロック部材は、箱の前面下部で弾性体により一方向に付勢された状態で回動可能に取り付けられたロックレバーからなり、ランプカバーを箱の前面に取り付けるために、箱に設けられた取付部材と、ランプカバーは、ランプカバーの下端に設けられ、箱の下側に設けられた回動蓋の回動軸側の端部に当接するとともに、上記回動蓋を回動させる第１の凸部と、ランプカバーの下端に設けられ、上記ロックレバーに当接するとともに、上記ロックレバーを回動させる第２の凸部とからなるものである。

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【００１５】第８の発明に係るプロジェクタ装置において、シャッター手段は、箱の前面側に穴部を有し、ランプカバーは、箱の前面を覆うカバー部分の上方に設けられ、上記穴部に係合する爪状部材からなるものである。

【００１６】第９の発明に係るプロジェクタ装置において、ランプカバーは、箱の前面を覆うカバー部分の上方と箱の上部後方とを結ぶような形で設けられた取っ手部を有し、この取っ手部は、ランプボックスがランプ取付け部に装着されたときに、筐体の上面よりも高い位置にある。

【００１７】第１０の発明に係るプロジェクタ装置は、筐体と、映像を表示するための光を発するランプ、このランプを固定保持するための箱からなる、筐体内のランプ取付け部に装着されるランプボックスと、上記筐体内のランプ取付け部を覆うために、上記筐体に取り付けられるランプ取付け部カバーと、上記箱の上面に設けられ、上記ランプ取付け部カバーが筐体に取り付けられたときに、上記ランプ取付け部の裏側に位置する面とほぼ接するぐらいの高さに形成された第４の凸部を有するホルダーとを備えたものである。

【００１８】第１１の発明に係るプロジェクタ装置は、筐体と、映像を表示するための光を発するランプ、このランプを固定保持するとともに、風を通すための通風口を有する箱、この箱の面には、弾性体により通風口を閉じる方向に付勢されるとともに、回動可能に設けられた回動蓋とからなるランプボックスと、筐体には、上記ランプボックスが装着されたときに回動蓋に当接し、回動蓋を所定量回動させる突起部が設けられたものである。

【００１９】第１２の発明に係るランプボックスは、映像を拡大表示するための光を発するランプと、このランプを固定保持するとともに、風を通すための通風口を有する箱と、この箱の上部に設けられ、通風口の開閉を行なうために摺動可能に保持されたシャッター手段と、箱の前面下部に設けられ、ランプを固定保持した箱を筐体内に固定するためのロック部材と、ランプを固定保持する箱の下面に設けられた通風口の開閉をするために回動自在に取り付けられた回動蓋と、上記シャッター手段の摺動始端側に設けられた穴部と、上記箱の前面全体を覆うカバー部、カバー部の下端に設けられ、上記回動蓋に当接し、回動蓋を閉じる方向に回動させる第１の凸部、カバー部の下端に設けられ、上記ロック部材と当接し、ロック部材を所定の方向へ回動させる第２の凸部、カバー部の上方に設けられ、上記シャッター手段に設けられた穴部と係合する爪状部材、カバー部の上方に一端が設けられ、他端は箱の後方部分に取り付けられる取手部とからなるランプカバーとを備えたものである。

【００２０】

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【発明の実施の形態】実施の形態１．図１はこの発明の実施の形態１による液晶プロジェクタ装置を示す組み図である。１はプロジェクタ装置、５０は筐体、５１はプロジェクタ装置１のランプ取付け部を覆うランプ取付け部カバー、５２は投射レンズである。

【００２１】図２はプロジェクタ装置の光源となるランプを示す図で、図２（ａ）はランプ４を正面から見た図、図２（ｂ）はランプ４を前方から見た図、図２（ｃ）はランプ４を後方から見た図、図２（ｄ）は側面図である。図３は通風口が閉じた状態のランプボックスを３方向から見た図で、図３（ａ）はランプボックス３を正面から見た図、図３（ｂ）はランプボックス３を前方から見た図、図３（ｃ）はランプボックス３を側面から見た図である。図４はランプ４を収納し、ランプ４に風を通す為の通風口が開放されている状態のランプボックスを示す組み立て図であり、図５は通風口が塞がれた状態のランプボックスを示す組み立て図である。

【００２２】図において、２はメタルハライドランプ、３はメタルハライドランプ２より出た光を所定の方向に反射させるリフレクタであり、これらを総称してランプ４とする。５は前記ランプ４を保持する箱、６はシャッターで、箱５に固定されているシャッタ６ｂとシャッター６ｂの下に摺動可能に取り付けられたシャッター６ａからなる。シャッター６ａにはガイドピン７が取り付けられていて、このガイドピン７がシャッター６ａの上側で箱５に固定されたシャッター６ｂのガイド溝に係合している。シャッター６ａはガイドピン７によりガイド溝に沿って摺動可能に保持され、かつ弾性体８でランプ４に風を通すための通風口２６ａ，２６ｂを常に閉じる（塞ぐ）方向に付勢されている。９はシャッター６に設けられたアームである。１０はシャッター６に設けられた穴部、１１はランプボックス１００に取り付けられているホルダーで、Ｄ凸部１２を備えている。このＤ凸部１２はランプボックスがプロジェクタ装置の正規の位置に装着され、その上からランプ取付け部カバーが取り付けられたときに、ランプ取付け部カバーの裏面と接するぐらいの高さを有する凸部である。ランプボックス１００は、このホルダー１１により筐体５０に固定される。１６は箱５に設けられてシャッター６が通風口２６ａ，２６ｂを塞ぐ方向に移動した状態で前記シャッター６に設けられている穴部１０と重なる位置に開けられた逃がし穴部である。

【００２３】図６は、プロジェクタ装置１の筐体５０に装着されたランプボックス１００を示す組み図と、ランプボックス１００の箱５に摺動可能に保持されているシャッター６のアーム７に回動当接する回動レバー部を示す要部拡大図である。図７、図８は ランプ取付け部カバー５１の裏面に取り付けられた押し付け板金に設けられた凸部により回動レバーが回動され、シャッター６のアーム７に当接し、さらに回動させる構造を示す要素図

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であり、図７は回動レバーが回動する前、図８は回動レバーが所定量だけ回動した状態を示すとともに、ランプ取付け部カバー５１が筐体５０に装着されたことを検知する検知スイッチの配置を示している。図において、４５はランプ取付け部カバー５１の裏面に取り付けられた押しつけ板金、１３は押し付け板金の端部に垂直に設けられた突片形状の凸部、１４は回動レバー、１５は回動レバー１４を一方向に付勢する弾性体、１７は回動レバー１４を回動可能に保持した回動軸である。３９はランプ取付け部カバー５１が筐体５０に装着されたときに、ランプ取付け部カバー５１が筐体５０の正規の位置に装着されたことを検知するスイッチである。プロジェクタ装置１は、この検知スイッチ３９がＯＮになった時点でランプ４を点灯するための電源を入れることができる。

【００２４】次に、プロジェクタ装置１にランプボックス１００を装着するための動作について説明する。ランプボックス１００は図３に示すような形態をしており、ランプ４が箱５により固定保持され、箱５の上部には、箱５に設けられた通風口を開放したり、塞いだりするためのシャッター機構からなるシャッター６が設けられている。シャッター６ａの右側端部（図３（ａ）参照）には、シャッター６ａをガイド溝に沿って摺動させるための動力を伝達するアーム９が設けられている。ここでは、これらを総称してランプボックス１００としている。ガイドピン７ａはシャッター６ａに取り付けられ、ガイドピン７ｂは箱５に設けられた突起部からなる。シャッター６は箱５に設けられているが、シャッター６を構成するシャッター６ａはシャッター６ｂの下で摺動可能に固定保持されている。

【００２５】シャッター６ａは、シャッター６ａに取り付けられたガイドピン７ａによりシャッター６ｂに設けられたガイド溝６ｃに摺動可能に取り付けられている。さらに、シャッター６ａは、ガイド溝６ｃと箱５に設けられたガイドピン７ｂとにより摺動可能に取り付けられている。そして、シャッター６ｂは、シャッター６ａの上側に配された位置で箱５に取り付けられている。シャッター６ｂは、ガイドピン７ｂがシャッター６ｂに設けられた丸穴にはめ込まれており、さらにガイドピン７ａが、シャッター６ｂに設けられたガイド溝６ｄにはめ込まれている。このように、箱５に固定されて取り付けられたシャッター６ｂの下側で、シャッター６ａは摺動可能に取り付けられると共に、固定されて取り付けられたシャッター６ｂの一端に取り付けられた弾性体８（たとえば、バネ）がシャッター６ａにも取り付けられ、ランプボックスの前面方向に付勢され、通常は通風口２６ａ，２６ｂを塞ぐ位置に保持されている。

【００２６】このランプボックス１００は、プロジェクタ装置１の筐体５０のランプ取付け部カバー５１を取り外し、ランプ取付け部に装着される。ランプ取付けカバー５１を取り外した状態は、図６に示されている。ただ

し、図６はすでにランプボックスが装着された状態である。

【００２７】プロジェクタ装置１へのランプボックス１００の装着について説明していく。ランプボックス１００は、プロジェクタ装置１から取り外されている状態では、ランプを冷却するための通風口などが塞がれた状態になっており、そのためにランプカバーが取り付けられている。ランプカバーなどについては、後で詳しく説明することにして、ここでは主にシャッター６の働きについて説明する。ランプボックス１００は、図６に示すようにプロジェクタ装置１に装着され、ホルダー１１により筐体５０に固定される。この時点では、後述するランプカバーは取り外されている。

【００２８】ランプボックスにプロジェクタ装置が装着されると、その上からランプ取付け部カバー５１を取り付ける。このランプ取付けカバー５１には、プロジェクタ装置１に取り付けられたときに、ランプボックス１００に設けられた回動レバー１４と当接する位置に凸部１３が設けられている。回動レバー１４と接する凸部１３の辺は傾斜しており、凸部１３と回動レバー１４が当接することにより、回動レバー１４を矢印方向に回動軸１７を中心に回動させる（図７、図８参照）。回動レバー１４が回動することにより、ランプボックス１００のアーム９に接している回動レバー１４も連動して回動し、アーム９を矢印方向にスライドさせる。アーム９がスライドすることにより、ランプボックス１００に設けられたシャッタ６ａがガイド溝６ｄに沿って、スライド（摺動）し、通風口２６ａ，２６ｂを開放する。スライドする前のシャッター６は弾性体８によって、ランプボックス１００の前方に付勢されているので、通風口２６ａ、２６ｂを塞ぐ状態を保っている。つまり、ランプ取付け部カバーが取り付けられるまでは、通風口２６ａ，２６ｂはシャッター６により塞がれている。

【００２９】図を参照して説明すると、ランプ取付け部カバー５１が取り付けられると、図７、図６に示すように凸部１３により回動レバー１４ａが回動する。回動レバー１４ａの回動とともに、回動レバー１４ｂも回動してアーム９をスライドさせる。アーム９がスライドする事でシャッター６ａもスライドする。これにより、図５に示されているように、シャッター６ａによって通風口２６ａ，２６ｂが塞がれた状態にあるランプボックス１００が、図４に示されているランプボックスのように、シャッター６ａがランプボックス１００の後方にスライドし、通風口２６ａ，２６ｂを開放した状態になる。なお、ランプ取付けカバー５１を筐体５０から取り外すと、シャッター６ａは弾性体８の付勢力によってランプボックスの前方方向に摺動し、通風口を塞ぐ。

【００３０】このように、ランプ取付け部カバー５２が取り付けられる前は、安全のために塞がれた状態にある通風口２６ａ，２６ｂを、ランプ取付け部カバー５２を筐体５０に取り付けることにより、開放させることができる。つまり、ランプボックスがプロジェクタ装置に装着される前は、通風口を塞いだままにして安全状態を保つことができ、なおかつランプボックスがプロジェクタ装置に装着された後は、ランプ点灯時の冷却用の風を送るための通風口を開放させることができる。これにより、ランプ取付け部カバーの開け閉めに応じて、通風口の開閉を容易にする、シャッター機構を提供することができる。

【００３１】実施の形態２．図９はランプカバーを示す部品図で、図９（ａ）はランプカバーを正面から見た図、図９（ｂ）は横から見た図、図９（ｃ）は上から見た図、図９（ｄ）はランプカバー上部に設けられた取手部を後方から見た図である。図１０はランプカバーが取り付けられたランプボックスを３方向から見た図で、図１０（ａ）はランプボックスを上から見た図、図１０（ｂ）はランプボックスを正面から見た図、図１０（ｃ）はランプボックスを後方から見た図、図１０（ｄ）はランプボックスを側面から見た側面図である。図１１、１２はランプボックス１００にランプカバー（取手）が取り付けられた組み図で、図１１は正面図、図１２はランプボックスを上から見た図を示す。

【００３２】図において２０はランプカバー、２１はランプカバー２０の上部に設けられた手で握る取手部、２２はランプカバーの前面のほぼ中央部分に設けられたＡ凸部、２３，２４はＡ凸部２２の両側に設けられたＢ凸部，Ｃ凸部、２５は箱５の下部に設けられたロックレバー、２７はロックレバー２５を一方向に付勢する弾性体、２８はランプボックス１００の箱５に設けられ、ランプカバー２０が箱５に挿入される時にガイドとなるランプカバーガイド、２９はロックレバーを回動可能に保持した回動軸である。

【００３３】図１３、図１４はランプボックス１００の箱５にランプカバー２０が取り付けられた状態で筐体５０に装着されたランプボックス１００を示す図、さらに図１３は側面の部分要素図、図１２は裏面からみた部分要素図を示す。図１５、図１６は筐体５０にランプボックス１００が装着された後、ランプボックス１００の箱５からランプカバー２０が取り外された状態を示す図で、図１３は側面の部分要素図、図１４は裏面からみた部分要素図を示す。図において、３０は箱５の底面に設けられ、ランプ４に冷却用の風を通すための通風口、３１は通風口３０を開放又は塞ぎ、箱５に回動可能に保持されている回動蓋、３２は回動蓋３１を一方向に付勢する弾性体である。図１３、１４ではランプカバー２０が箱５に取り付けられているため、図１１に示すＡ凸部２２が回動蓋３１の一端に当接し、回動蓋３１を弾性体３２の付勢力に打ち勝って通風口３０の方向に回動させている。したがって回動蓋３１は通風口３０を塞いでいる。図１５、１６ではランプカバー２０は箱５から取り

除かれている為、回動蓋３１は弾性体３２により蓋を開く方向に付勢され、通風口３０を開放している。

【００３４】次に、プロジェクタ装置１に、ランプカバー２０が取り付けられているランプボックス１００を装着する際の動作について説明する。ランプボックス１００は、プロジェクタ装置１から取り外されているときは、ランプカバー２０が取り付けられている。また、交換用のランプボックスにもランプカバー２０が取り付けられている。このように、ランプボックスは安全のためにランプボックス単体で扱われるときは、ランプカバー２０が取り付けられた状態にある。

【００３５】上記のように、ランプボックス１００が単体で扱われる場合には、ランプカバー２０が取り付けられているが、ここではまず、ここではランプボックス１００に、ランプカバー２０を取り付ける動作について説明する。ランプカバーが取り付けられていない状態のランプボックス１００は、図３に示すようになっており、図３（ａ）にあるようにシャッター６は閉じられており通風口を塞いでいる。また、図３（ｂ）にあるように、Ｌ字型をしたロックレバー２５ａ，２５ｂは弾性体（たとえば、バネ）により矢印方向に付勢されている。さらに、回動蓋３１は開放されている。

【００３６】このような状態にあるランプボックス１００に、ランプカバー２０を取り付ける。ランプカバー２０はランプボックス１００の前面を覆うようなカバー部２４を有している。ランプカバー２０をランプボックス１００に取り付けるには、このカバー部２９をランプボックス１００の前面に沿わせるようにスライドさせ、ランプカバーガイド２８の内側を通して、取り付ける。ランプカバーをスライドさせていくと、ランプカバー１００のカバー部３５の下辺に設けられたＡ凸部２２が、回動蓋３１の固定端側に当接し、回動蓋３１を回動させ、蓋が閉じた状態になる。ランプカバーが取り付けられてない状態では、図１６のランプボックス１００を下側から見た図から分かるように、回動蓋３１は開放された状態にある。回動蓋３１は回動軸３３を中心に回動し、弾性体３２により蓋を開放する方向に付勢されている。図１４はランプカバー２０が取り付けられた状態のランプボックス１００を下側から見たもので、回動蓋３１は閉じられた状態にあり、ランプボックス１００の下面に設けられた通風口３０を塞いでいる。

【００３７】また、カバー部３５の両側に設けられた２つのＢ凸部２４はロックレバー２５に当接し、弾性体２７の付勢力よりも強い力でロックレバー２５を回動させる。ロックレバー２５ａは回動軸２９を中心に時計回りに回動し、ロックレバー２５ｂは回動軸２９を中心に反時計回りに回動する。ランプカバー２０が完全に取り付けられた状態が図１１に示されたランプボックス１００であって、回動蓋３１は閉じられ、ロックレバー２５ａ，２５ｂは、それぞれ矢印方向に回動させられている。ランプカバー２０に設けられたｃ凸部２４は穴部１０に挿入されるので、シャッター６を摺動できなくしている。カバー部２０はランプの前面を覆い、開放口を塞いでいる。

【００３８】このように、ランプカバー２０が取り付けられた状態にあるランプボックスをプロジェクタ装置１に装着する。ランプカバー２０には、ユーザが取り扱いやすいように取っ手部２１が設けられている。図１２に示すように上から見た状態にあるランプボックス１００の取手部２０を握って持ち上げ、プロジェクタ装置１に装着する。プロジェクタ装置１に装着されたランプボックス１００を側面から見たものが図１２である。この状態では、まだランプカバー２０は取り外されていないので、ランプボックス１００の前面はカバー部３５に覆われたままであり、回動蓋３１も閉じていて通風口３０も塞がれた状態である。

【００３９】ランプボックス１００がプロジェクタ装置１に装着されたら、次にランプカバー２０を取り外す。ランプカバー２０はランプボックス１００に設けられたシャッター６ｂの穴部１０と穴部１０と同位置にあるシャッター６ａの逃がし穴部１６の両方に嵌合しており、さらにランプボックス１００の箱５にネジ１８により固定保持されている。したがって、このネジ１８を外すことにより、ランプボックス１００からランプカバー２０を取り外すことができる。ネジ１８を外し、ランプカバー２０を上方に引き抜いた状態を示したのが図１５である。ランプカバー２０を取り外すことで、ランプボックス前面の覆いが無くなり、さらに回動蓋３０に当接することで、回動蓋３１を閉じる方向に回動させる力を加えていたＡ凸部が回動蓋３１から離れるので、回動蓋３１は開き、通風口３０は開放される。ランプボックスを、側面から見た図１５、下側から見た図１６に示すように回動蓋３１が開き、通風口３０は開放される。

【００４０】また、ランプカバー２０が取りはずされることで、同様に当接することにより、ロックレバー２５に回動させる力を加えていたＢ凸部２３も、ロックレバー２５から離れることになる。したがってロックレバー２５ａ，２５ｂは弾性体２７により付勢される方向に回動し、図２２に示すような状態になる。これによって、ロックレバー２５ａ，２５ｂはロック受け部５５に噛み合う状態になり、ランプボックス１００はプロジェクタ装置１（筐体５０）に固定される。

【００４１】このようにランプカバー２０の取り外しによって、ロックレバー２５を回動させるようにしたので、ランプボックス１００にランプカバー２０を取り付けているときはロックレバー２５はロック受け部５５と噛み合わないので（図１１参照）、プロジェクタ装置から自由に取り外すことができる。さらに、ランプボックス１００からランプカバー２０を取り外したときはロックレバー２５はロック受け部５５と噛み合い、筐体５０

に固定されるので、取り外すことはできない。したがって、ランプカバーが取り付けられていない状態では、ランプボックスをプロジェクタ装置から取り外すことはできず、また、取り外されたときはランプカバーが必ず取り付けられている状態なので、ランプボックス１００を安全に取り扱うことができる。単に交換用に用意されたランプボックスであってもランプカバーが取り付けられていなければ、ロックレバー２５をロック受け部５５と噛み合わせ可能な状態にできないので、プロジェクタ装置１に装着不可能となるので、たとえ交換用のランプボックスであってもランプカバー２０を取り付けておく必要があり、安全を保つことが可能となる。また、ランプボックス１００にランプカバー２０が取り付けられていれば、Ｃ凸部２４がシャッター６ａ，６ｂの穴部１０、逃がし穴部１６に挿入され、嵌合しているので、シャッター６の開閉をロックすることができる。

【００４２】実施の形態３．図１８はこの発明の実施の形態２によるプロジェクタ装置の回動レバーと回動を検知する検知スイッチの構成を示す部分要素図である。図において、４０は検知スイッチで、ランプ取付け部カバー５１に取り付けられた押しつけ板金４５の凸部１３が回動レバー１４を所定量回動させた位置でスイッチが作動・検知するよう配置されている。

【００４３】プロジェクタ装置１にランプボックス１が装着され、ランプカバー１が取り外された後で、ランプ取付け部カバー５１を筐体５０にはめ込む（図１８ａを参照）。ランプ取付け部カバー５１を筐体５０にはめ込むことで、凸部１３が回動レバー１４ａに当接し、矢印方向に回動レバーは所定量だけ回動する（図１８ｂを参照）。ところで、回動レバーが所定量回動したときに検知スイッチがＯＮとなる位置に検知スイッチを設けているので、この検知スイッチがＯＮになったことを検出することで、ランプ取付け部カバーがプロジェクタ装置１（筐体５０）に確実に取り付けられたことを知ることができる。そして、プロジェクタ装置は、この検知スイッチ４０がＯＮとなった時点でランプ４を点灯するための電源を入れることができるように設定されている。このようにすることで、ランプ取付け部カバーが完全に取り付けられなければ、ランプ４を点灯させることができず、ランプ取付け部カバーが不完全に取り付けられた状態ではランプが点灯することはなく安全である。

【００４４】実施の形態４．図１９はこの発明の実施の形態３によるプロジェクタ装置の回動レバーによりスライドさせられるシャッターのスライド端を検知する検知スイッチの構成を示す部分要素図である。図において、４１は検知スイッチで、シャッター６が所定量スライドすることによりＯＮされる。

【００４５】プロジェクタ装置１にランプボックス１が装着され、ランプカバー１が取り外された後で、ランプ取付け部カバー５１を筐体５０にはめ込む（図１９ａを参照）。ランプ取付け部カバー５１を筐体５０にはめ込むことで、凸部１３が回動レバー１４ａに当接し、矢印方向に回動レバーは回動軸１７を中心に所定量だけ回動する。さらに回動レバー１４ａの回動に連動して、回動レバー１４ｂも回動する。シャッター６ａはバネ８により矢印とは反対の方向に付勢されているが、付勢力より大きな力でアーム９が回動レバー１４ｂにより押されるので、シャッター６ａも矢印方向にスライドする。（図１９ｂを参照）。

【００４６】ところで、ランプ取付けカバー５１が完全に取り付けられ、回動レバーが所定量回動し、シャッター６ａに設けられたアーム９が所定量移動したときに検知スイッチがＯＮとなる位置に検知スイッチを設けているので、この検知スイッチがＯＮになったことを検出することで、ランプ取付け部カバーがプロジェクタ装置１（筐体５０）に確実に取り付けられたことを知ることができる。そして、プロジェクタ装置は、この検知スイッチ４１がＯＮとなった時点でランプ４を点灯するための電源を入れることができるように設定されている。このようにすることで、たとえ、ランプ取付け部カバーが完全に取り付けられたとしても、なんらかの不都合により、シャッター６ａが所定量スライドしなかったときはランプ４を点灯させることができず、シャッター６ａが所定量スライドし、通風口が完全に開放されなければランプ４を点灯させることはできない。つまり、ランプボックス１００の冷却が不完全な状態ではランプを点灯させることはできず、十分に安全を確保することができる。

【００４７】実施の形態５．図２０はこの発明の実施の形態４によるプロジェクタ装置のランプ取付け部カバーの構造を示す図、図２１はランプ取付け部カバーを筐体に取り付ける方向を示す図である。図において、４５はランプ取付け部カバー５１に取り付けネジ４６にて取り付けられ、回動レバー１４を回動させる凸部１３が形成された押し付け板金である。

【００４８】押し付け板金４５は図２１から分かるように、ランプ取付け部カバー５１が筐体５０に装着された際にランプボックス１００側に位置するように取り付けられている。また、図２０に示すように押し付け板金４５はランプ取付け部カバー５１のほぼ全面を覆っている。この押しつけ板金４５は、プロジェクタ装置１が作動しているときに発生するランプボックス１００からの輻射熱を遮り、ランプ取付け部カバー５１へ熱が伝わらないようにしている。また、凸部１３をこの押し付け板金４５と一体にして設けているので、回動レバー１４を介して凸部１３に伝わってくるランプボックスからの熱を、ランプ取付け部カバー４５の全面を覆っている押し付け板金４５によって放熱させることができる。これは、たとえば凸部１３が押し付け板金４５とは別体で設けられていた場合に、熱によってランプ取付け部カバー

４５を変形させてしまうなどの不測の事態を防ぐことができる。

【００４９】実施の形態６．図５、９、１２はこの発明の実施の形態５によるプロジェクタ装置のシャッターを摺動不可とする構造を示す組み図及び部品図である。図５の状態にシャッター６ａが位置し、シャッター６ａの穴部１０とシャッター６ｂの逃がし穴部１６が合わさった状態のところにランプカバー２０のＣ凸部２４が挿入されて図１２の状態になると、シャッター６はランプカバー２０のＣ凸部２４にはばまれて前記箱５の面を摺動できなくなる。

【００５０】実施の形態７．図２２、２３はこの発明の実施の形態７によるプロジェクタ装置の取手及びランプボックスを固定するホルダーに形成されたＤ凸部がランプ取付け部カバーと干渉する構造を示す図である。このＤ凸部１２はランプボックスがプロジェクタ装置の正規の位置に装着され、その上からランプ取付け部カバーが取り付けられたときに、ランプ取付け部カバーの裏面にある押し付け板金と接するか、わずかに隙間を有するぐらいの高さの凸部である。

【００５１】図２２はランプボックス１００の箱５にランプカバー２０が取り付けられている状態を示す。この図の状態ではランプ取付け部カバー５１はランプカバー２０の取手部２１にぶつかるので筐体５０の正規の位置に取り付けることができない。また、図２３において、ランプボックス１００の箱５が筐体５０の正規の高さ位置に装着されない場合はＤ凸部１２が図２３で示される状態（図２３は前記ランプボックス１００は正規の位置に装着されている）よりランプ取付け部カバー５１側に高くなる。その場合はランプ取付け部カバー５１は筐体５０の正規の位置に取り付けられない。

【００５２】このように、ランプボックス１００にランプカバー２０が取り付けられたままのときや、ランプカバー２０が取り外されていてもランプボックス１００がプロジェクタ装置１の筐体５０の正規の位置に装着されていないときは、ランプ取付け部カバー５２が筐体５０の正規の位置に取り付けられないようになっている。これにより、ランプボックス１００が不完全に装着された状態でプロジェクタ装置１の電源がＯＮされることを防ぐことができる。

【００５３】実施の形態８．図２４、２５はこの発明の実施の形態８によるプロジェクタ装置におけるランプボックス内の箱に収納されているランプに風を通すための通風口の開け閉めを行う構造を示した部分要素図である。図において６０は第一の通風口、６１は第二の通風口、６２は第一の通風口６０を開け閉めするために回動可能に配置された第一の回動蓋、６３は第二の通風口６１を開け閉めするために回動可能に配置された第二の回動蓋、６４は第一の回動蓋６２を回動可能に支持する第一の回動軸、６５は第二の回動蓋６３を回動可能に支持する第二の回動軸、６６は筐体５０に設けられ第一の回動蓋６２を所定量回動させる第一の凸部、６７は筐体５０に設けられ第二の回動蓋６３を所定量回動させる第二の凸部、７０はランプ４を収納する箱、１０１はランプボックスである。

【００５４】図２４の状態では第一および第二の回動蓋６２，６３は常に第一および第二の通風口６０，６１を閉じる方向にそれぞれの弾性体（図示せず）により付勢されている。ランプボックス１０１を図２４に示す矢印６８方向にセット、すなわちプロジェクタ装置１の筐体５０に装着すると図２５に示す状態となる。第一の回動蓋６２は筐体５０に設けられた第一の凸部６６で第一の回動軸６４を軸として第一の通風口６０を開放する方向に所定量回動する。また、第二の回動蓋６３は筐体５０に設けられた第二の凸部６７で第二の回動軸６５を軸として第二の通風口６１を開放する方向に所定量回動する。このようにして第一および第二の通風口６０，６１は開放されてた状態となる。これによって、ランプボックス１０１はプロジェクタ装置１に装着されたときに、回動蓋が回動させられ通風口が開放される。つまり、ランプボックスだけで取り扱われるときは、回動蓋は常に閉じた状態にあり、通風口も塞がれているので、安全を確保することできる。

【００５５】

【発明の効果】第１の発明に係るプロジェクタ装置によれば、筐体にランプ取付け部カバーが取り付けられる前の状態では、ランプ取付け部に取り付けられたランプボックスの通風口はシャッター手段により塞がれた状態にあり、またランプ取付け部カバーを筐体に取り付けることにより、ランプ取付け部に設けられた凸部が回動部材を所定量回動させることにより、この回動部材によってシャッター手段を摺動させることにより通風口を開放するので、ランプボックスを装着したときに万が一ランプが損傷しても通風口は塞がれているので、ランプの破片が通風口を通り抜けて箱の外に飛び出すことを防止することができ、また、ランプ取付け部カバーが筐体に取り付けられたときはランプボックスの通風口を開放することができるのでランプへ風を通すことが可能となり安全に動作させることができる。

【００５６】第２の発明に係るプロジェクタ装置によれば、ランプ取付けカバーに設けられた凸部が第１の回動レバーに当接して、第１の回動レバーを回動させることで、シャッター手段に当接する第２の回動レバーを連動して回動させることができるので、ランプ取付け部カバーを筐体に取り付けることにより第１の回動レバーに伝えられた動力を確実にシャッター手段を摺動させるため動力に変えることができる。

【００５７】第３の発明に係るプロジェクタ装置によれば、ランプに風を通す通風口を開放するシャッター手段を摺動させる回動部材が所定量回動した位置に、回動レ

バーの回動を検知する検知スイッチを配置したので、回動レバーが確実に回動したかが確認でき信頼性を向上させることができる。

【００５８】第４の発明に係るプロジェクタ装置によれば、ランプに風を通す通風口を開放するシャッター手段が回動部材の回動により所定量摺動させられた位置に、シャッターの摺動を検知する検知スイッチを配置したので、シャッターが確実に摺動し通風口が十分に開放された状態にあるかを確認することができ、信頼性を向上させることができる。

【００５９】第５の発明に係るプロジェクタ装置によれば、ランプ取付け部カバーには、ランプ取付け部カバー裏側のほぼ全面を覆うように取り付けられた板金の端部を、ランプボックス側に向けて折り曲げて形成された凸部を有しているので、このランプ取付け部カバーをランプボックスも装着された筐体に取り付けることにより、回動部材を回動させることができ、さらにランプボックスからの輻射熱を直接ランプ取付け部カバーに輻射させない。また、凸部は板金の端部を折り曲げることにより形成されているので、凸部がシャッター手段に当接することにより、凸部側に伝わってくるランプボックスからの熱をランプ取付け部カバーの裏側ほぼ全面に取り付けられた板金により放熱することができる。

【００６０】第６の発明に係るプロジェクタ装置によれば、筐体と、映像を拡大表示するための光を発するランプ、このランプを固定保持するとともに、風を通すための通風口を有する箱、この箱の上部に設けられ、通風口の開閉を行なうために摺動可能に保持されたシャッター手段、箱の前面下部に設けられ、ランプを固定保持した箱を筐体内に固定するためのロック部材、ランプを固定保持する箱の下面に設けられた通風口の開閉をするために回動自在に取り付けられた回動蓋とからなるランプボックスと、映像を拡大表示するための光が発せられるランプボックスの面を覆うランプカバーと、ランプボックスが筐体に装着され、上記ランプカバーがランプボックスから取り外されたときに、上記ロック部材と噛み合うロック受け部とを備えているので、ランプボックスにランプカバーが取り付けられていない状態では、ロック部材とロック受け部が噛み合っているので、筐体からランプボックスを取り外すことはできず、ランプをむき出しの状態で筐体の外に取り出すことを防ぐことができ、安全を保つことができる。

【００６１】第７の発明に係るプロジェクタ装置によれば、ランプボックスに取り付けられるランプカバーを取り付けたり取り外したりすることによって、ランプボックスを筐体に固定するためのロックレバーを回動させて、ロック受け部と噛み合わせたり、噛み合いを解除したりできるので、ランプカバーが取り付けられた状態では筐体内からランプボックスを取り出すことができ、また、ランプカバーが取り外された状態ではロック部とロック受け部が噛み合っているので、ランプボックスを筐体内から取り出すことはできず、ランプがむき出しになった状態でランプボックスを筐体の外に取り出すことを防ぐことができ、安全を保つことができる。

【００６２】第８の発明に係るプロジェクタ装置によれば、ランプカバーがランプボックスに取り付けられると、爪状部材とシャッター手段に設けられた穴部が係合するので、シャッター手段の摺動を規制することができ、ランプカバーを取り外さなければシャッター手段は摺動することはない。

【００６３】第９の発明に係るプロジェクタ装置によれば、ランプカバーは、箱の前面を覆うカバー部分の上方と箱の上部後方とを結ぶような形で設けられた取手部を有し、この取手部は、ランプボックスがランプ取付け部に装着されたときに、筐体の上面よりも高い位置にあるので、ランプカバーを取り外さなければ、ランプ取付け部カバーを筐体に取り付けることができないので、ランプカバーが付いたままの状態でプロジェクタ装置が動作するのを防ぐことができる。

【００６４】第１０の発明に係るプロジェクタ装置によれば、筐体と、映像を表示するための光を発するランプ、このランプを固定保持するための箱からなる、筐体内のランプ取付け部に装着されるランプボックスと、上記筐体内のランプ取付け部を覆うために、上記筐体に取り付けられるランプ取付け部カバーと、上記箱の上面に設けられ、上記ランプ取付け部カバーが筐体に取り付けられたときに、上記ランプ取付け部の裏側に位置する面とほぼ接するぐらいの高さに形成された第４の凸部を有するホルダーとを備えたので、ランプボックスが筐体内の正規の位置に装着されていないときは、筐体にランプ取付け部カバーを取り付けようとしても、第４の凸部に当たるので、筐体に確実に取付け部カバーを取り付けることができず、ランプボックスが正規の位置に正確に装着しなければ、プロジェクタ装置を動作させることはできず、安全を保つことができる。

【００６５】第１１の発明に係るプロジェクタ装置によれば、筐体と、映像を表示するための光を発するランプ、このランプを固定保持するとともに、風を通すための通風口を有する箱、この箱の面には、弾性体により通風口を閉じる方向に付勢されるとともに、回動可能に設けられた回動蓋とからなるランプボックスと、筐体には、上記ランプボックスが装着されたときに回動蓋に当接し、回動蓋を所定量回動させる突起部が設けられているので、通常は閉じた状態にある通風口を、ランプボックスを筐体に装着することにより開放することができ、さらにランプボックスがプロジェクタ装置から取り外されていても回動蓋は閉じているので、ランプボックスがプロジェクタ装置から取り外されているときに万が一ランプが損傷しても安全を保つことができ、また、プロジェクタ装置に取り付けられたときは回動蓋を回動させて

19

通風口を開放できるので、安全に動作させることができる。

【００６６】第１２の発明に係るランプボックスは、映像を拡大表示するための光を発するランプと、このランプを固定保持するとともに、風を通すための通風口を有する箱と、この箱の上部に設けられ、通風口の開閉を行なうために摺動可能に保持されたシャッター手段と、箱の前面下部に設けられ、ランプを固定保持した箱を筐体内に固定するためのロック部材と、ランプを固定保持する箱の下面に設けられた通風口の開閉をするために回動自在に取り付けられた回動蓋と、上記シャッタ手段の摺動始端側に設けられた穴部と、上記箱の前面全体を覆うカバー部、カバー部の下端に設けられ、上記回動蓋に当接し、回動蓋を閉じる方向に回動させる第１の凸部、カバー部の下端に設けられ、上記ロック部材と当接し、ロック部材を所定の方向へ回動させる第２の凸部、カバー部の上方に設けられ、上記シャッター手段に設けられた穴部と係合する爪状部材、カバー部の上方に一端が設けられ、他端は箱の後方部分に取り付けられる取手部とからなるランプカバーとを備えているので、ランプボックスに設けられている通風口を塞ぐとともに、ランプボックスが光を発する面をランプカバーにより覆われた状態に保つことができるので、安全に取り扱うことができる。

【図面の簡単な説明】

【図１】　液晶プロジェクタ装置を示す組み図である。

【図２】　ランプを示す組み図である。

【図３】　ランプボックスを３方向から見た図である。

【図４】　ランプボックスを上から見た組み図である。

【図５】　ランプボックスを上から見た組み図である。

【図６】　プロジェクター装置を示す組み図と要部拡大図である。

【図７】　回動レバー部の要部組み図である。

【図８】　回動レバー部の要部組み図である。

【図９】　ランプカバーを４方向から見た図である。

【図１０】　ランプカバーが取り付けられたランプボックスを４方向から見た図である。

【図１１】　ランプカバーの取り付けられたランプボックスを示す正面図である。

【図１２】　ランプカバーの取り付けられたランプボックスを上から見た図である。

【図１３】　ランプボックスが筐体に装着された状態を

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示す図である。

【図１４】　ランプボックスが筐体に装着された状態の裏面を示す図である。

【図１５】　ランプボックスが筐体に装着された状態を示す図である。

【図１６】　ランプボックスが筐体に装着された状態の裏面を示す図である。

【図１７】　ランプボックスからランプカバーが取り外された状態を示す図である。

【図１８】　回動レバーと検知スイッチの関係を示す図である。

【図１９】　シャッターと検知スイッチの関係を示す図である。

【図２０】　ランプ取付け部カバーを示す図である。

【図２１】　ランプ取付け部カバーを筐体に装着する様子を示す部分断面図。

【図２２】　ランプ取付け部カバーとランプボックスに取り付けたランプカバーが干渉する様子を示す図。

【図２３】　ホルダーが設けられたランプボックスを筐体に装着し、ランプ取付け部カバーを取り付けた状態を示す図。

【図２４】　ランプボックスの通風口の開け閉めを示した図である。

【図２５】　ランプボックスの通風口の開け閉めを示した図である。

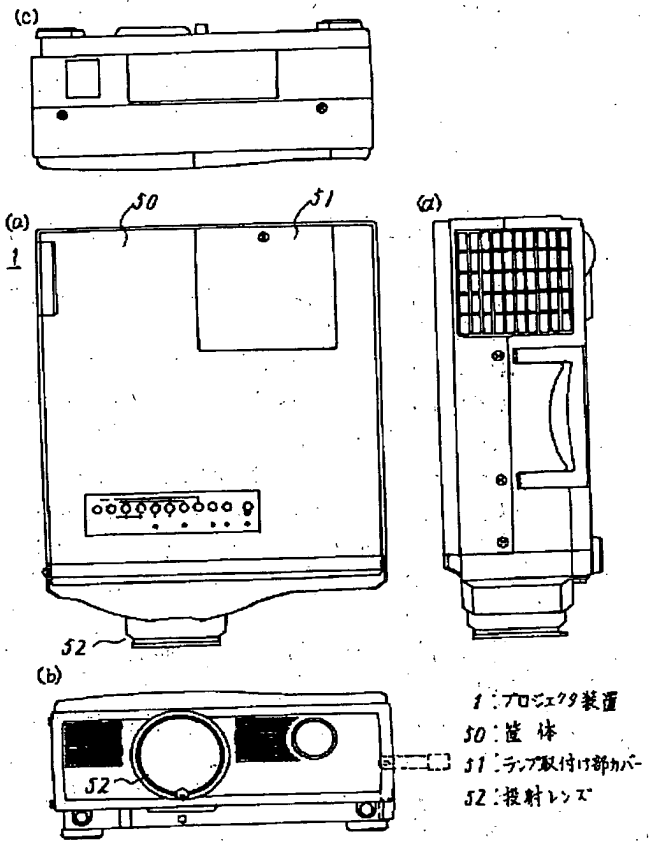
【図２６】　従来のランプボックスを筐体から取り外す工程を示す図である。

【図２７】　従来の液晶プロジェクタ装置の構成を示す略断面図である。

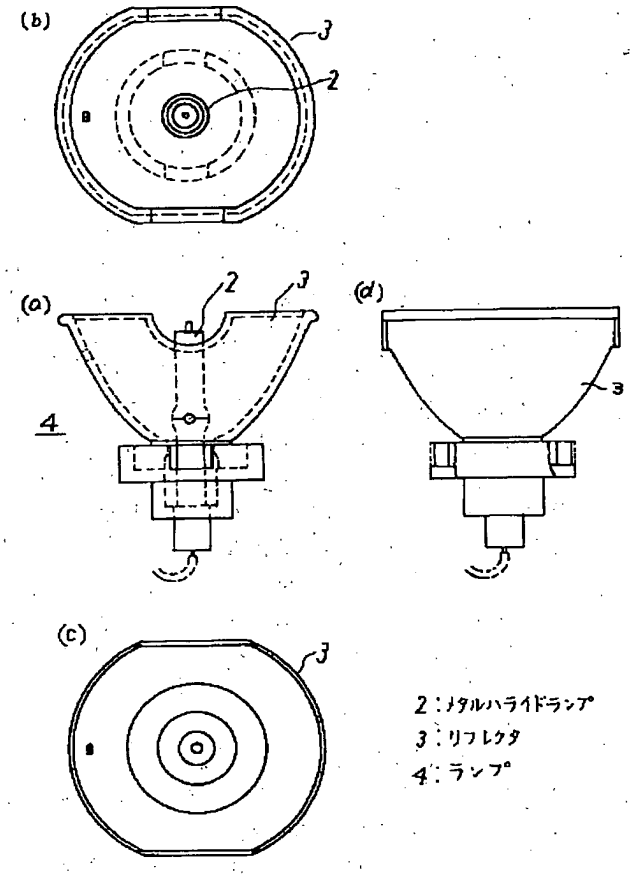
【符号の説明】

４　ランプ、　５　箱、　６　シャッター、　８　弾性体、９　アーム、　１０　穴部、　１１　ホルダー、　１２　D凸部、１３　凸部、　１４　回動レバー、　１５　弾性体、　２０　取手、２２　A凸部、　２３　B凸部、　２４　C凸部、２５　ロックレバー、　２６　通風口、　２７　弾性体、２８　取手ガイド、　３０　通風口、　３１　回動蓋、　３２　弾性体、３９　検知スイッチ、４０　検知スイッチ、　４１　検知スイッチ、５０　筐体、　５１　ランプ取付け部カバー、　５５　ロック受け部、７０　箱、　１００　ランプボックス、　１０１　ランプボックス。

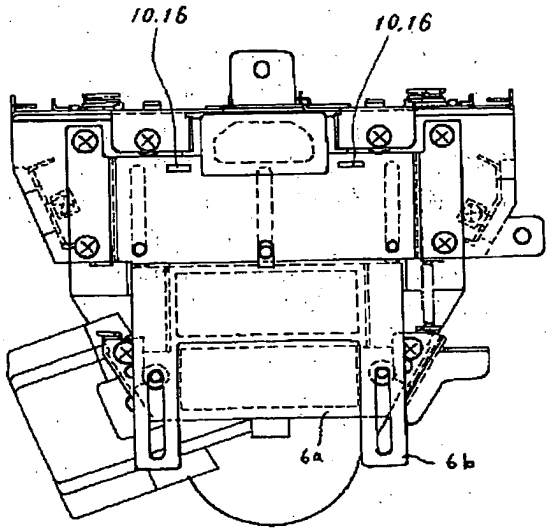
【図１】


(c)
(a)
1
50
51
52
(d)
(b)
52
1：プロジェクタ装置
50：筐体
51：ランプ取付け部カバー
52：投射レンズ

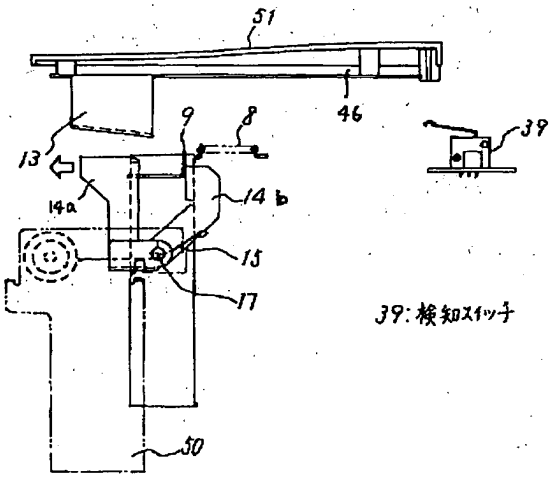
【図２】


(b)
3
2
(a)
2
3
4
(d)
3
(c)
3
2：メタルハライドランプ
3：リフレクタ
4：ランプ

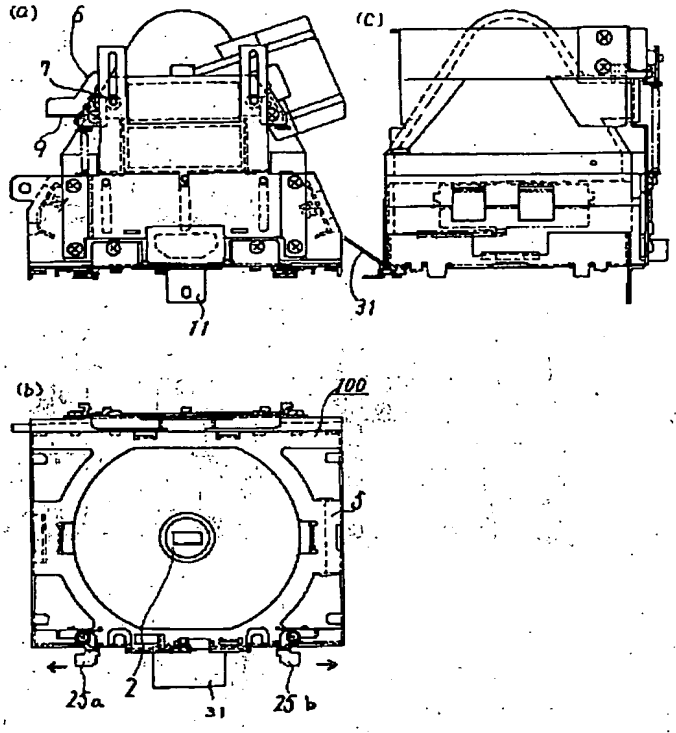
【図５】


10.16
10.16
6a
6b

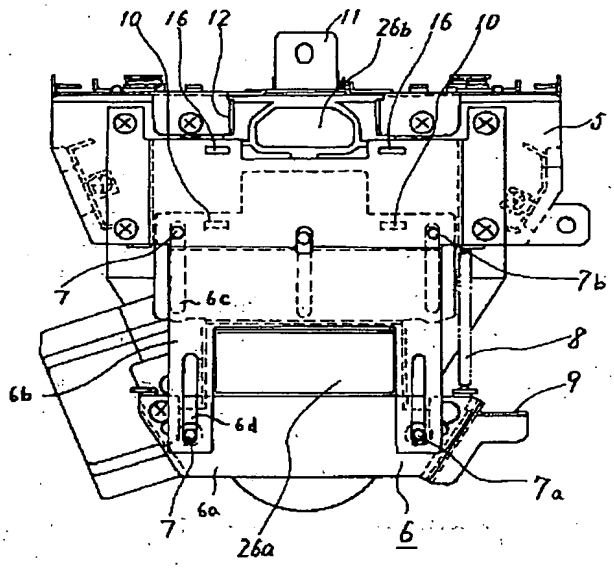
【図７】


51
46
39
9
8
13
14a
14b
15
17
50
39：検知スイッチ

【図３】

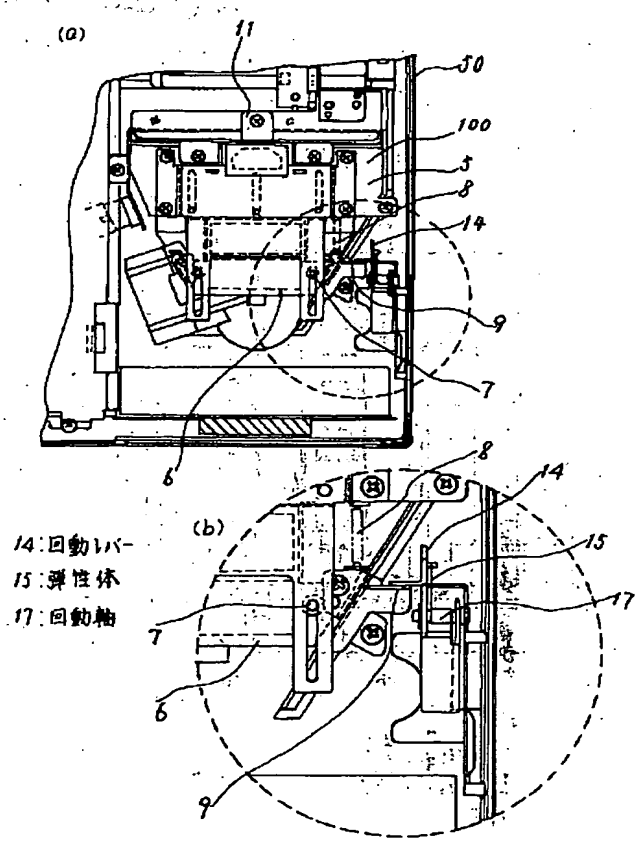


【図４】



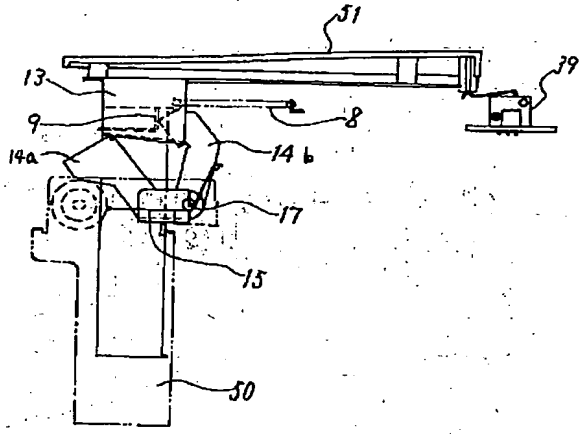
5：箱
6：シャッター
7：ガイドピン
8：弾性体
9：アーム
10：穴部
16：逃がし穴部
26a：通風口
26b：通風口

【図６】

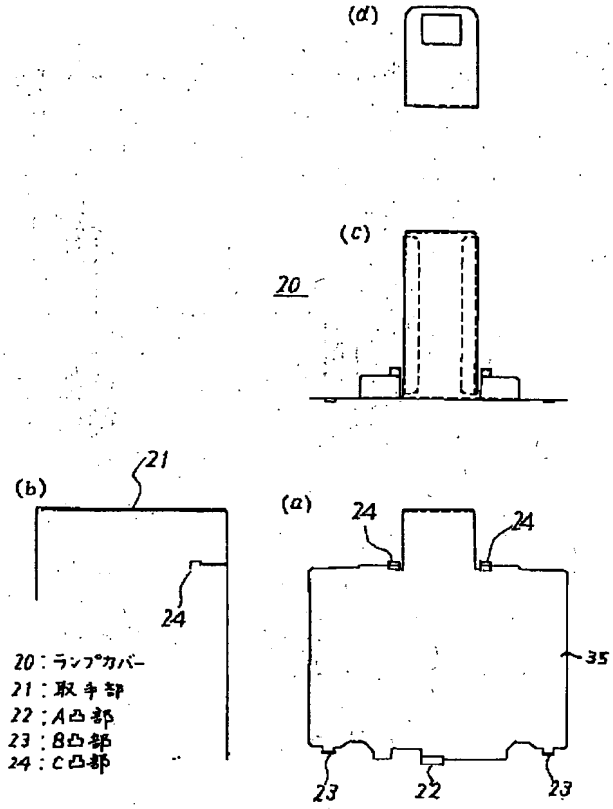


14：回動レバー
15：弾性体
17：回動軸

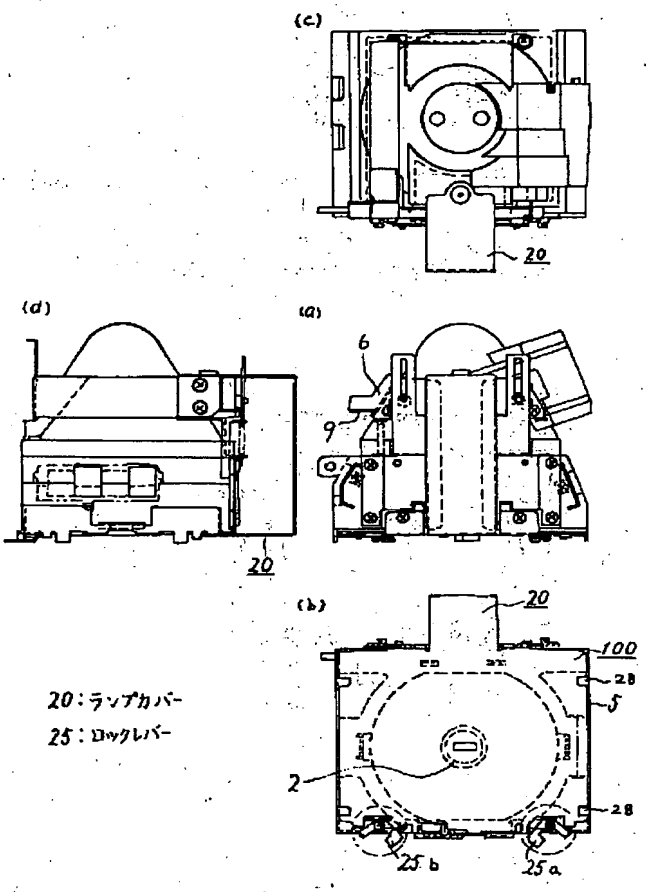
【図８】



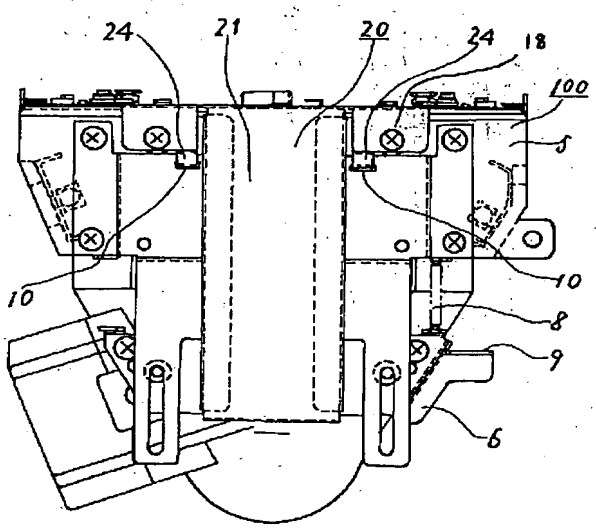
【図９】



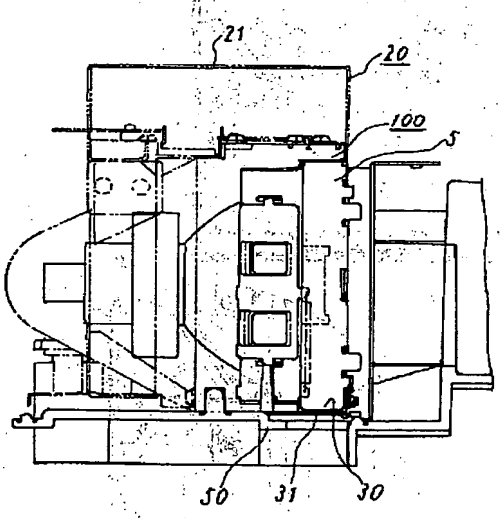
【図１０】



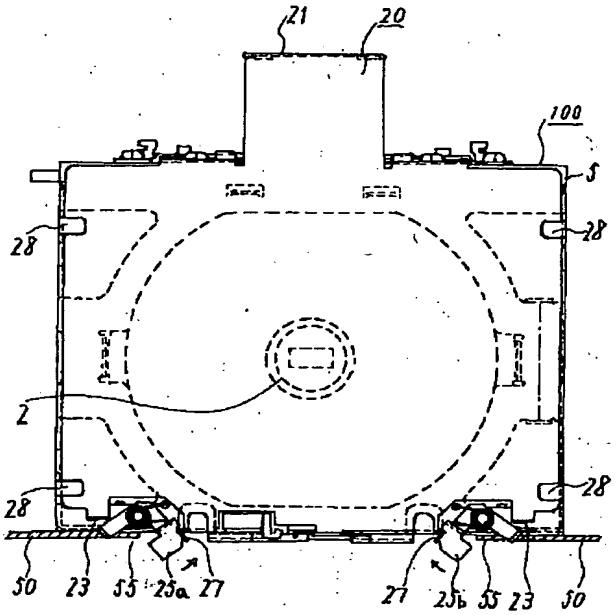
【図１２】



【図１３】

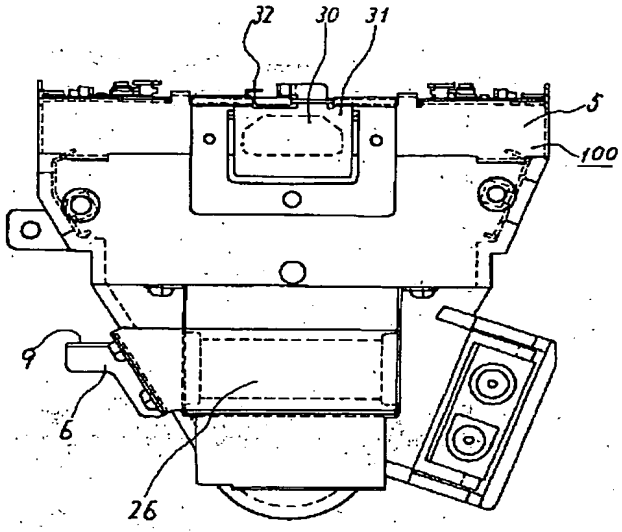


【図１１】

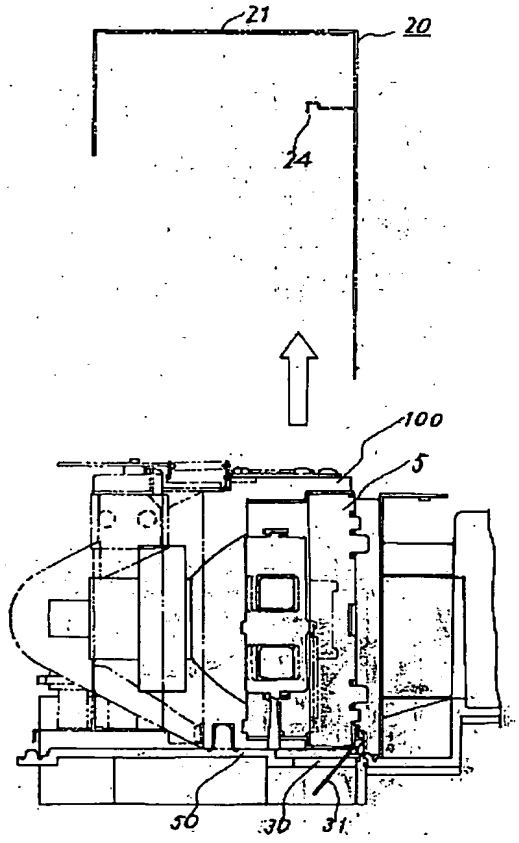


55：ロック受け部　　27：弾性体
28：ランプカバーガイド
29：回動軸

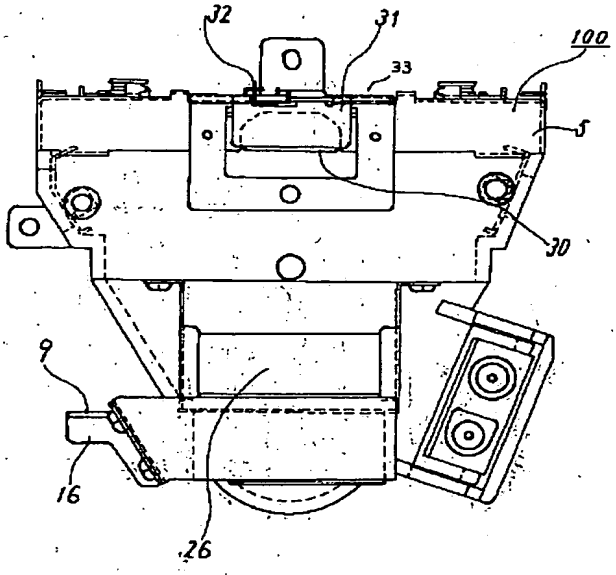
【図１４】



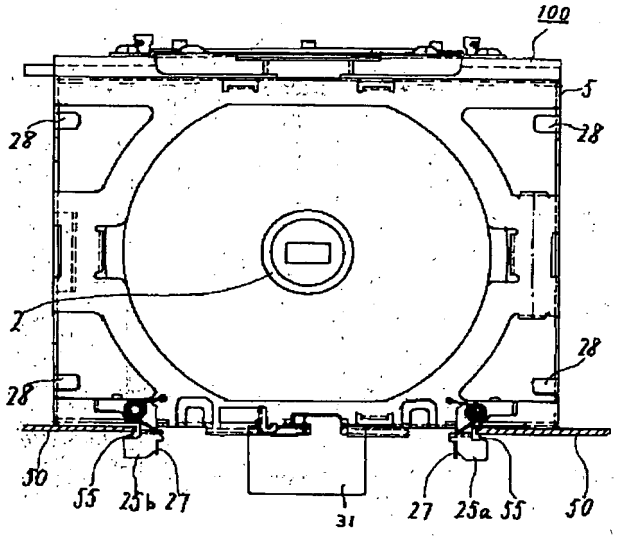
【図１５】



【図１６】

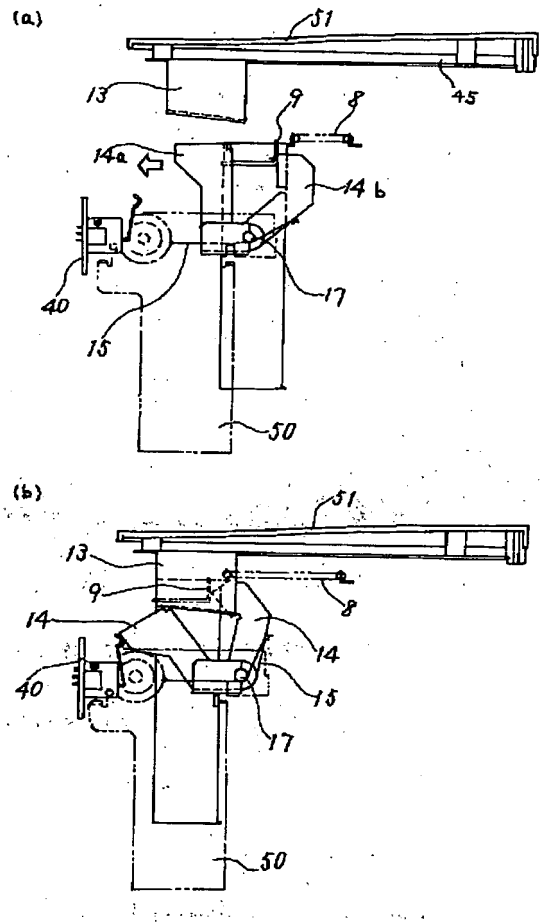


【図１７】

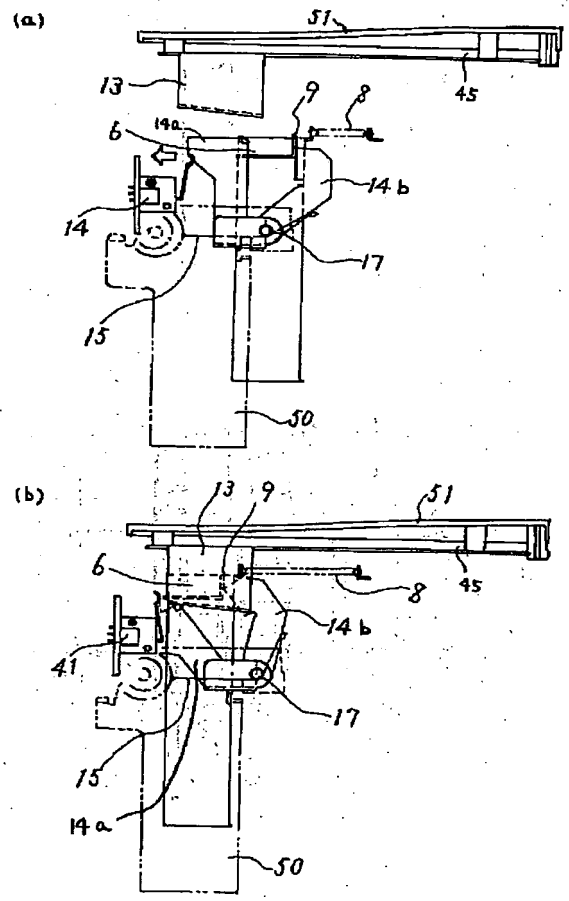


55：ロック受け部

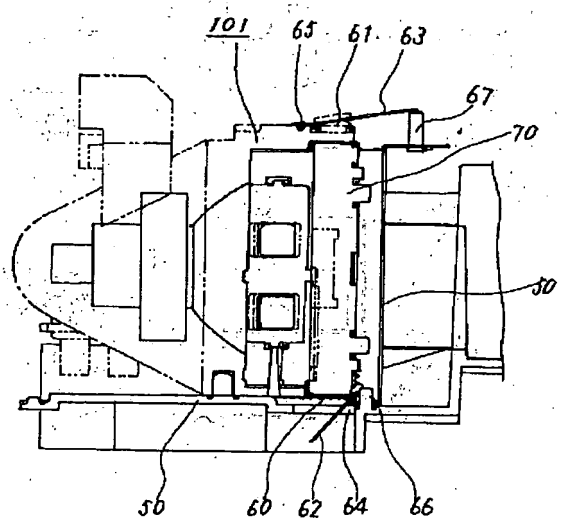
【図１８】



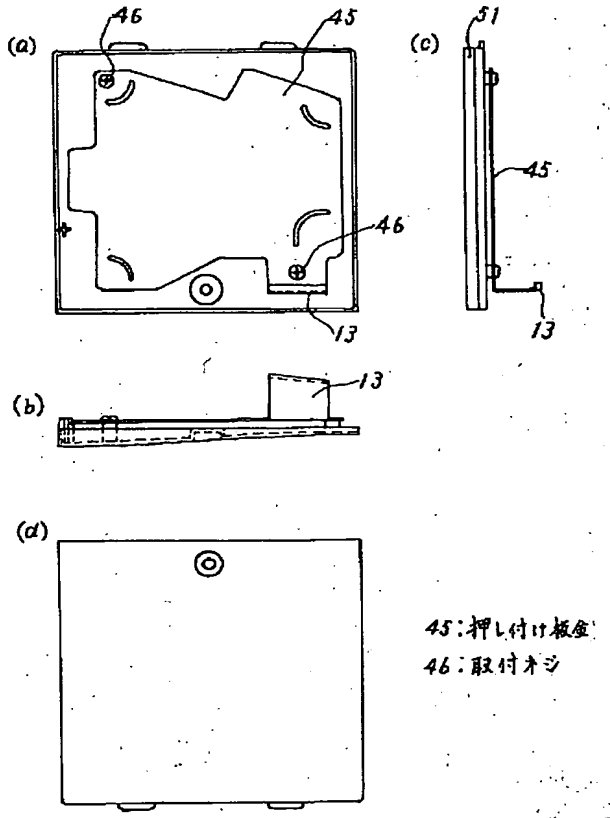
【図１９】



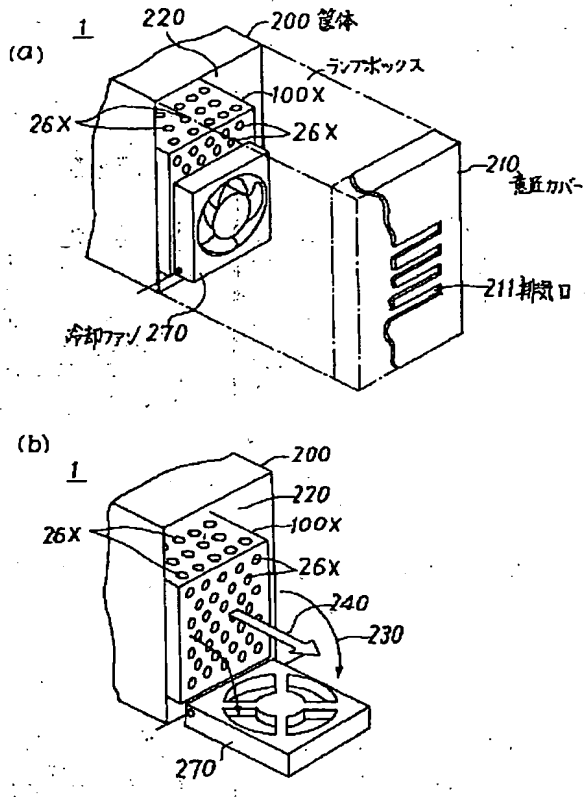
【図２５】



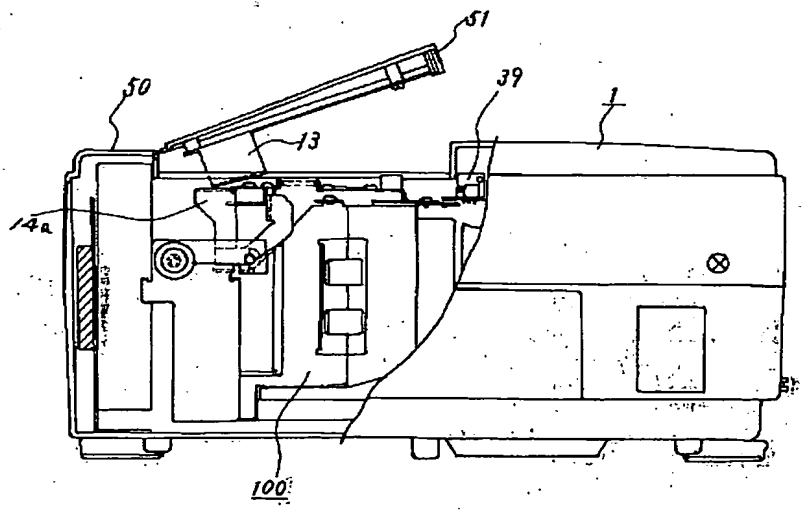
【図２０】


(a)
46
45
46
13
(c)
51
45
13
(b)
13
(d)
45：押し付け板金
46：取付ネジ

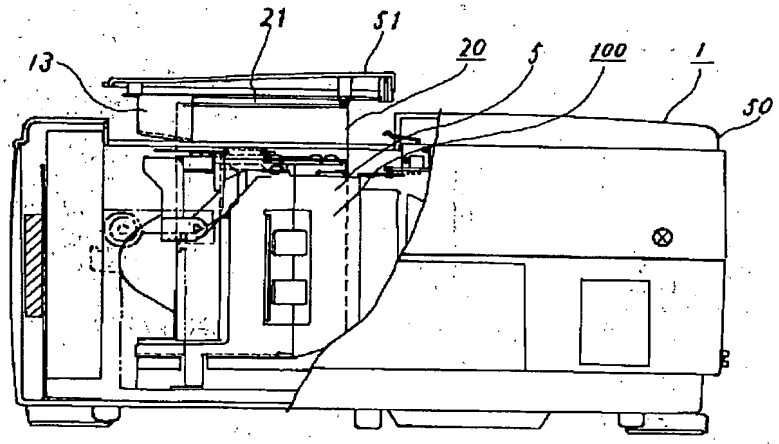
【図２６】


(a)
1
220
200 筐体
ランプボックス
100X
26X
26X
210
意匠カバー
211 排気口
冷却ファン 270
(b)
1
200
220
100X
26X
26X
240
230
270

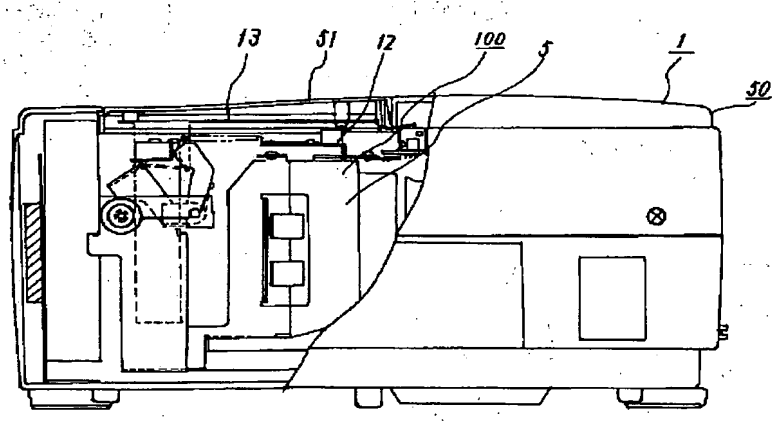
【図２１】


51
50
39
1
13
14a
100

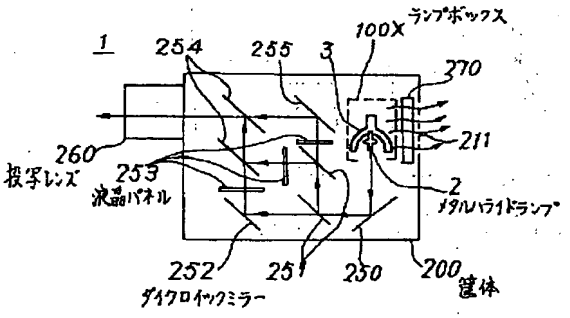
【図２２】


21
51
20
5
100
1
50
13

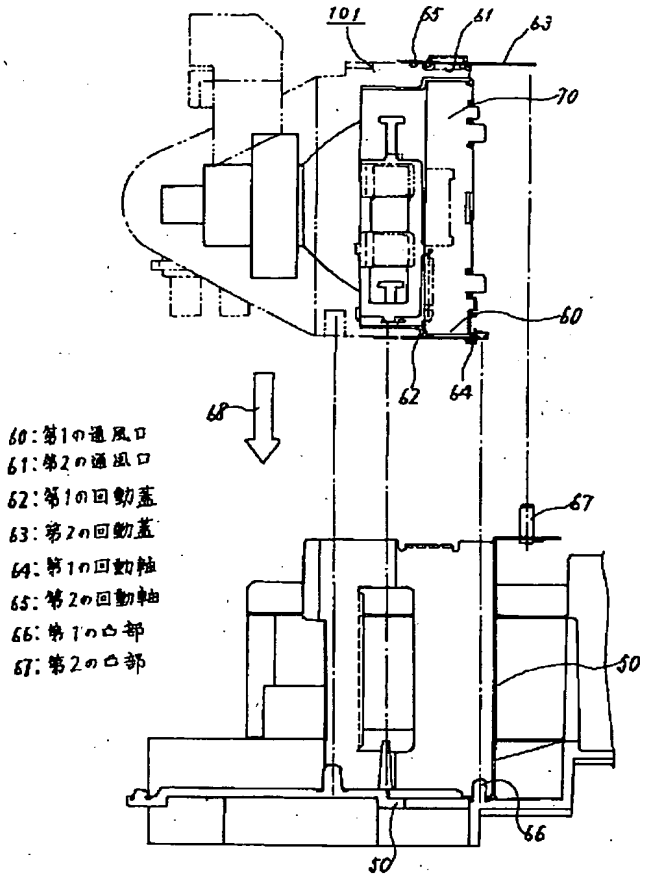
【図２３】


13
51
12
100
5
1
50

【図２７】


1
254
255
3
100X
ランプボックス
270
211
260
投写レンズ
253
液晶パネル
2
メタルハライドランプ
252
ダイクロイックミラー
251
250
200
筐体

【図２４】



フロントページの続き

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LL15

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] While carrying out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case, and this lamp The lamp box which is established in the box which has a vent hole for letting a wind pass, and the upper part of this box, and consists of a shutter means held possible [sliding] and which is attached in the lamp anchoring section in a case, When attached in the rotation member prepared in the case in the location which contacts the shutter means of the lamp box with which the lamp anchoring section of the above-mentioned case was equipped, and the lamp anchoring section of the above-mentioned case Projector equipment characterized by having lamp anchoring section covering which has the heights which the above-mentioned rotation member prepared in the above-mentioned case is contacted [heights], and make the specified quantity rotation of the above-mentioned rotation member carry out in the predetermined direction.
[Claim 2] A rotation member is projector equipment according to claim 1 characterized by having the 2nd rotation lever which is prepared in the location which the heights prepared in lamp anchoring section covering contact, and contacts the 1st rotation lever held rotatable and the above-mentioned shutter means, is interlocked with rotation of the 1st rotation lever, and rotates.
[Claim 3] Projector equipment according to claim 1 characterized by equipping the rotation edge of a rotation member with the detection switch which detects that the rotation member carried out specified quantity rotation by the heights of lamp anchoring section covering.
[Claim 4] Projector equipment according to claim 1 characterized by forming the detection switch which detects that the above-mentioned shutter carried out specified quantity sliding by rotation of a rotation member in the sliding edge of a shutter means.
[Claim 5] the heights of lamp anchoring section covering — **** of lamp anchoring section covering — the projector equipment according to claim 1 characterized by being formed by bending the edge of the sheet metal mostly attached in the whole.
[Claim 6] While carrying out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case, and this lamp The shutter means held possible [sliding] in order to be prepared in the box which has a vent hole for letting a wind pass, and the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, In order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, it consists of a rotation lid attached free [rotation]. Lamp box, When a lamp box is equipped with the field of the lamp box where the light for carrying out the enlarged display of the image is emitted by the case with a wrap lamp cover and the above-mentioned lamp cover is removed from a lamp box Projector equipment characterized by having the lock receptacle section which gears with the above-mentioned lock member.
[Claim 7] In order for a lock member to consist of a locking lever attached rotatable after having been energized by the one direction with the elastic body in the front lower part of a box and to attach a lamp cover in the front face of a box The attachment member prepared in the box and

a lamp cover While contacting the edge by the side of the rotation shaft of the rotation lid which was formed in the lower limit of a lamp cover and formed in the box bottom Projector equipment according to claim 6 characterized by consisting of the 1st heights which rotate the above-mentioned rotation lid, and the 2nd heights which rotate the above-mentioned locking lever while being prepared in the lower limit of a lamp cover and contacting the above-mentioned locking lever.

[Claim 8] It is projector equipment according to claim 6 characterized by consisting of a pawl-like member which a shutter means has a hole in the front-face side of a box, and the front face of a box is established in a lamp cover above a wrap covering part, and engages with the above-mentioned hole.

[Claim 9] It is projector equipment according to claim 6 characterized by for a lamp cover having the handle section prepared in the front face of a box in the form where the upper part of a wrap covering part and the up back of a box are connected, and this handle section being in a location higher than the top face of a case when the lamp anchoring section is equipped with a lamp box.

[Claim 10] The lamp box which consists of a box for carrying out fixed maintenance of the lamp which emits the light for displaying a case and an image, and this lamp and with which the lamp anchoring section in a case is equipped, and the lamp anchoring section in the above-mentioned case to a wrap sake When it is prepared in lamp anchoring section covering attached in the above-mentioned case, and the top face of the above-mentioned box and the above-mentioned lamp anchoring section covering is attached in a case Projector equipment characterized by having the electrode holder which has the 4th heights formed in height to the extent that the field located in the background of the above-mentioned lamp anchoring section is touched mostly.

[Claim 11] While carrying out fixed maintenance of the lamp which emits the light for displaying a case and an image, and this lamp, in the box which has a vent hole for letting a wind pass, and the field of this box While being energized in the direction which closes a vent hole with an elastic body, to the lamp box which consists of a rotation lid formed rotatable, and a case Projector equipment characterized by preparing the height which a rotation lid is contacted [height] when equipped with the above-mentioned lamp box, and carries out specified quantity rotation of the rotation lid.

[Claim 12] While carrying out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image, and this lamp The box which has a vent hole for letting a wind pass, and the shutter means held possible [sliding] in order to be prepared in the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, The hole prepared in the sliding start edge side of the above-mentioned shutter means, and the whole front face of the above-mentioned box The wrap covering section, The 1st heights which make it rotate in the direction which is established in the lower limit of the covering section, contacts the above-mentioned rotation lid, and closes a rotation lid, The 2nd heights which it is prepared [heights] in the lower limit of the covering section, and the above-mentioned lock member is contacted [heights], and rotate a lock member in the predetermined direction, It is the lamp box which an end is prepared above the pawl-like member which engages with the hole which was prepared above the covering section and prepared in the above-mentioned shutter means, and the covering section, and is characterized by equipping the other end with the lamp cover which consists of the Toride section attached in the back part of a box.

[Translation done.].

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the lamp box with which the projector equipment and projector equipment which carry out expansion projection of the image with the light of the light source are equipped and which generates the light of the light source.
[0002]
[Description of the Prior Art] Discharge lamps, such as a metal halide lamp, are used for the light source of conventional projector equipment. Since it is an article of consumption, while continuing using projector equipment, it will be necessary to exchange this lamp. About this lamp, various devices are given also from the former, for example, that part can be seen to JP,3-62387,U, JP,5-38645,U, JP,8-314011,A, etc.
[0003] Drawing 26 is process drawing which is shown in JP,5-38645,U and in which showing the process which takes out the conventional lamp box from a liquid crystal projector. As shown in drawing 26 , the stowage 220 for containing lamp box 100X is established in the case 200 of projector equipment 1. When projector equipment 1 is usually used, a case 200 is equipped with lamp box 100X, and the stowage 220 of a case 200 is carried out in the lid with the design covering 210. In order to carry out air cooling of the lamp box 100X, the cooling fan 270 is stored in the stowage 220 together with lamp box 100X. In order to miss outside the wind which blows off from a cooling fan 270, the exhaust port 211 is established in the design covering 210.
[0004] Lamp box 100X is constituted so that it can remove from a case 200 for the exchange. When removing lamp box 100X, as shown in drawing 26 (a), the design covering 210 is removed first. Next, as shown in drawing 26 (b), a cooling fan 270 is moved to the sense of an arrow head 230 so that it may not become the obstacle of the ejection of lamp box 100X, and lamp box 100X is pulled out to the sense of an arrow head 240. Wearing of new lamp box 100X is performed by the procedure contrary to the procedure of above-mentioned removal.
[0005] Drawing 27 is the abbreviation sectional view showing the 1 configuration outline of projector equipment. The reflector 3 for condensing the light emitted from the metal halide lamp 2 and metal halide lamp 2 as the light source is contained by lamp box 100X. It is reflected by the cold mirror 250 and the light which came out of lamp box 100X is led to a dichroic mirror 251. The light which came out of the light source is decomposed into red and a green and blue light using two dichroic mirrors 251. The decomposed light passes the corresponding liquid crystal panel 253. In case it passes, the image information from which the light of three colors differs in each from the liquid crystal panel 253 of three sheets is given. The light of three colors which passed the liquid crystal panel 253 is compounded with a dichroic mirror 254. The compounded light carries out expansion projection of the image through the projection lens 260 at a screen (illustration abbreviation). Between a metal halide lamp 2 and a projector lens 260, a total reflection mirror 252,255 etc. is formed for modification of an optical path. During lamp lighting, in order to cool a metal halide lamp 2, the cooling fan 270 operated and the wind is generated. This wind takes heat from these through the side of a metal halide lamp 2 and a reflector 3, and is discharged besides projector equipment 1 from an exhaust port 211 through a cooling fan 270 from vent hole 26X (refer to drawing 26 (b)) of lamp box 100X.

[0006]
[Problem(s) to be Solved by the Invention] Since the light source of conventional projector equipment is constituted including a discharge lamp with internal pressure high as mentioned above, the removal activity of a lamp box is restricted to the thing expert in the handling, and a technical problem will not be produced if the handling of a convention is carried out. However, for high-performance-izing, high brightness-ization of a lamp progresses, and a wattage is also large and it is in the inclination for internal pressure to also increase in recent years. When the handling besides a convention should be carried out and a lamp explodes, possibility that a fragment will disperse arises from a vent hole.
[0007] It was made in order that this invention may solve the above-mentioned trouble, and when lamp boxes, such as a lamp box in the condition were removed from projector equipment, and a lamp box for exchange, are taken out besides projector equipment, even if a lamp explodes, the fragment of a lamp aims at offering the lamp box and the projector equipment with which the fragment of a lamp does not disperse from the aperture which the vent hole of a lamp box and the light of a lamp leave.
[0008]
[Means for Solving the Problem] While the projector equipment concerning the 1st invention carries out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case, and this lamp The lamp box which is established in the box which has a vent hole for letting a wind pass, and the upper part of this box, and consists of a shutter means held possible [sliding] and which is attached in the lamp anchoring section in a case, When attached in the rotation member prepared in the case in the location which contacts the shutter means of the lamp box with which the lamp anchoring section of the above-mentioned case was equipped, and the lamp anchoring section of the above-mentioned case The above-mentioned rotation member prepared in the above-mentioned case is contacted, and it has lamp anchoring section covering which has the heights which make the specified quantity rotation of the above-mentioned rotation member carry out in the predetermined direction.
[0009] In the projector equipment concerning the 2nd invention, the heights prepared in lamp anchoring section covering contact, and a rotation member is equipped with the 1st rotation lever held rotatable and the 2nd rotation lever which is prepared in the location which contacts the above-mentioned shutter means, is interlocked with rotation of the 1st rotation lever, and rotates.
[0010] The projector equipment concerning the 3rd invention equips the rotation edge of a rotation member with the detection switch which detects that the rotation member carried out specified quantity rotation by the heights of lamp anchoring section covering.
[0011] The projector equipment concerning the 4th invention equips the sliding edge of a shutter means with the detection switch which detects that the above-mentioned shutter carried out specified quantity sliding by rotation of a rotation member.
[0012] the projector equipment concerning the 5th invention — setting — the heights of lamp anchoring section covering — **** of lamp anchoring section covering — it is formed by bending the edge of the sheet metal mostly attached in the whole.
[0013] While the projector equipment concerning the 6th invention carries out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case, and this lamp The shutter means held possible [sliding] in order to be prepared in the box which has a vent hole for letting a wind pass, and the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The lamp box which consists of a rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, When a lamp box is equipped with the field of the lamp box where the light for carrying out the enlarged display of the image is emitted by the case with a wrap lamp cover and the above-mentioned lamp cover is removed from a lamp box, it has the lock receptacle section which gears with the above-mentioned lock member.
[0014] In the projector equipment concerning the 7th invention a lock member In order to

consist of a locking lever attached rotatable after having been energized by the one direction with the elastic body in the front lower part of a box and to attach a lamp cover in the front face of a box The attachment member prepared in the box and a lamp cover While contacting the edge by the side of the rotation shaft of the rotation lid which was formed in the lower limit of a lamp cover and formed in the box bottom It consists of the 1st heights which rotate the above-mentioned rotation lid, and the 2nd heights which rotate the above-mentioned locking lever while being prepared in the lower limit of a lamp cover and contacting the above-mentioned locking lever.

[0015] In the projector equipment concerning the 8th invention, a shutter means has a hole in the front-face side of a box, the front face of a box is established in a lamp cover above a wrap covering part, and it consists of a pawl-like member which engages with the above-mentioned hole.

[0016] In the projector equipment concerning the 9th invention, a lamp cover has the handle section prepared in the front face of a box in the form where the upper part of a wrap covering part and the up back of a box are connected, and this handle section is in a location higher than the top face of a case, when the lamp anchoring section is equipped with a lamp box.

[0017] The lamp box which consists of a box for carrying out fixed maintenance of the lamp which emits light for the projector equipment concerning the 10th invention to display a case and an image, and this lamp and with which the lamp anchoring section in a case is equipped, When it is prepared in lamp anchoring section covering attached by the above-mentioned case and the top face of the above-mentioned box and the above-mentioned lamp anchoring section covering is attached in a wrap sake at a case, the lamp anchoring section in the above-mentioned case It has the electrode holder which has the 4th heights formed in height to the extent that the field located in the background of the above-mentioned lamp anchoring section is touched mostly.

[0018] While the projector equipment concerning the 11th invention carries out fixed maintenance of the lamp which emits the light for displaying a case and an image, and this lamp In the box which has a vent hole for letting a wind pass, and the field of this box While being energized in the direction which closes a vent hole with an elastic body, when the lamp box which consists of a rotation lid formed rotatable, and a case are equipped with the above-mentioned lamp box, a rotation lid is contacted, and the height which carries out specified quantity rotation of the rotation lid is prepared.

[0019] While the lamp box concerning the 12th invention carries out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image, and this lamp The box which has a vent hole for letting a wind pass, and the shutter means held possible [sliding] in order to be prepared in the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, The hole prepared in the sliding start edge side of the above-mentioned shutter means, and the whole front face of the above-mentioned box The wrap covering section, The 1st heights which make it rotate in the direction which is established in the lower limit of the covering section, contacts the above-mentioned rotation lid, and closes a rotation lid, The 2nd heights which it is prepared [heights] in the lower limit of the covering section, and the above-mentioned lock member is contacted [heights], and rotate a lock member in the predetermined direction, An end is prepared above the pawl-like member which engages with the hole which was prepared above the covering section and prepared in the above-mentioned shutter means, and the covering section, and the other end is equipped with the lamp cover which consists of the Toride section attached in the back part of a box.

[0020]

[Embodiment of the Invention] Gestalt 1. drawing 1 of operation shows and constructs the liquid crystal projector equipment by the gestalt 1 of implementation of this invention, and is drawing. For 1, as for a case and 51, projector equipment and 50 are [wrap lamp anchoring section covering and 52] projector lenses about the lamp anchoring section of projector equipment 1.

[0021] Drawing 2 is drawing showing the lamp used as the light source of projector equipment, and drawing where drawing 2 (a) looked at the lamp 4 from the transverse plane, drawing where drawing 2 (b) looked at the lamp 4 from the front, drawing where drawing 2 (c) looked at the lamp 4 from back, and drawing 2 (d) are side elevations. Drawing 3 is drawing which looked at the lamp box in the condition that the vent hole closed, from three directions, and drawing where drawing 3 (a) looked at the lamp box 3 from the transverse plane, drawing where drawing 3 (b) looked at the lamp box 3 from the front, and drawing 3 (c) are drawings which looked at the lamp box 3 from the side face. It is the assembly Fig. showing the lamp box in the condition that the vent hole for drawing 4 containing a lamp 4 and letting a wind pass on a lamp 4 is opened wide, and drawing 5 is the assembly Fig. showing the lamp box in the condition that the vent hole was plugged up.

[0022] In drawing, it is the reflector which reflects the light out of which 2 came out of from the metal halide lamp, and 3 came from the metal halide lamp 2 in the predetermined direction, and these are named generically and it considers as a lamp 4. The box with which 5 holds said lamp 4, and 6 are shutters, and consist of shutter 6a attached in the bottom of shutter 6b currently fixed to the box 5, and shutter 6b possible [sliding]. The guide pin 7 is attached in shutter 6a, and it is engaging with the guide slot of shutter 6b where this guide pin 7 was fixed to the box 5 with the shutter 6a up side. Shutter 6a is energized in the direction which always closes the vent holes 26a and 26b for being held possible [sliding] along a guide slot with a guide pin 7, and letting a wind pass on a lamp 4 with an elastic body 8 (it closes). 9 is the arm prepared in the shutter 6. The hole by which 10 was prepared in the shutter 6, and 11 are the electrode holders attached in the lamp box 100, and are equipped with the D heights 12. These D heights 12 are heights which have height to the extent that the rear face of lamp anchoring section covering is touched, when the location of the normal of projector equipment is equipped with a lamp box and lamp anchoring section covering is attached from on that. The lamp box 100 is fixed to a case 50 with this electrode holder 11. 16 is the spill port section which was able to be opened in the location which laps with the hole 10 prepared in said shutter 6 in the condition of having moved in the direction in which it is prepared in a box 5 and a shutter 6 plugs up vent holes 26a and 26b.

[0023] Drawing 6 is the important section enlarged drawing showing the rotation lever section which carries out rotation contact on the arm 7 of the shutter 6 which shows the lamp box 100 with which the case 50 of projector equipment 1 was equipped, and which constructs and is held possible [sliding] at drawing and the box 5 of the lamp box 100. Drawing 7 and drawing 8 A rotation lever rotates by the heights which were attached in the rear face of the lamp anchoring section covering 51 and which pushed and were prepared in the sheet metal. Before it is the element Fig. showing the structure which contacts the arm 7 of a shutter 6 and is rotated further and a rotation lever rotates drawing 7 , while drawing 8 shows the condition that only the specified quantity rotated, a rotation lever Arrangement of the detection switch which detects that the case 50 was equipped with the lamp anchoring section covering 51 is shown. In drawing, the elastic body with which the heights of a protruding piece configuration by which 45 was attached in the rear face of the lamp anchoring section covering 51, and in which it pushed against and a sheet metal and 13 were prepared at right angles to the edge of kick plate gold with push, and 14 energize the rotation lever 14 on a rotation lever, and 15 energizes it to an one direction, and 17 are the rotation shafts which held the rotation lever 14 rotatable. 39 is a switch which detects that the location of the normal of a case 50 was equipped with the lamp anchoring section covering 51, when a case 50 is equipped with the lamp anchoring section covering 51. Projector equipment 1 can switch on the power source for turning on a lamp 4, when this detection switch 39 is turned on.

[0024] Next, the actuation for equipping projector equipment 1 with the lamp box 100 is explained. The lamp box 100 is carrying out the gestalt as shown in drawing 3 , fixed maintenance of the lamp 4 is carried out with a box 5, and the shutter 6 which consists of a shutter device for opening wide the vent hole prepared in the box 5, or closing is formed in the upper part of a box 5. The arm 9 which transmits the power for sliding shutter 6a along a guide slot is formed in the right-hand side edge (refer to drawing 3 (a)) of shutter 6a. Here, these are named generically and

it is considering as the lamp box 100. Guide pin 7a is attached in shutter 6a, and guide pin 7b consists of a height prepared in the box 5. Although the shutter 6 is formed in the box 5, fixed maintenance of the sliding of shutter 6a which constitutes a shutter 6 is enabled under shutter 6b.

[0025] Shutter 6a is attached in guide slot 6c prepared in shutter 6b by guide pin 7a attached in shutter 6a possible [sliding]. Furthermore, shutter 6a is attached possible [sliding] by guide slot 6c and guide pin 7b prepared in the box 5. And shutter 6b is attached in the box 5 in the location allotted to the shutter 6a bottom. Shutter 6b is inserted in the round hole by which guide pin 7b was prepared in shutter 6b, and guide pin 7a is further inserted in 6d of guide slots established in shutter 6b. Thus, with the shutter 6b down side which was fixed to the box 5 and attached, the elastic body 8 (for example, spring) attached in the end of shutter 6b which was fixed and was attached is attached also in shutter 6a, and shutter 6a is energized in the direction of a front face of a lamp box, and is held in the location which usually plugs up vent holes 26a and 26b while it is attached possible [sliding].

[0026] This lamp box 100 removes the lamp anchoring section covering 51 of the case 50 of projector equipment 1, and the lamp anchoring section is equipped with it. The condition of having removed the lamp anchoring covering 51 is shown in drawing 6 . However, drawing 6 is in the condition of already having been equipped with the lamp box.

[0027] Wearing of the lamp box 100 to projector equipment 1 is explained. As for the lamp box 100, the vent hole for cooling a lamp etc. will be closed by the condition of being removed from projector equipment 1, therefore the lamp cover is attached. A lamp cover will be explained in detail later and work of a shutter 6 is mainly explained here. As shown in drawing 6 , projector equipment 1 is equipped with the lamp box 100, and it is fixed to a case 50 with an electrode holder 11. The lamp cover mentioned later is removed at this time.

[0028] If a lamp box is equipped with projector equipment, the lamp anchoring section covering 51 will be attached from on the. When attached in projector equipment 1 at this lamp anchoring covering 51, heights 13 are formed in the location which contacts the rotation lever 14 prepared in the lamp box 100. The side of the heights 13 which touch the rotation lever 14 inclines, and when the rotation lever 14 contacts heights 13, the rotation lever 14 is rotated in the direction of an arrow head centering on the rotation shaft 17 (refer to drawing 7 and drawing 8). The rotation lever 14 which is in contact with the arm 9 of the lamp box 100 also interlocks, and is rotated, and an arm 9 is made to slide in the direction of an arrow head, when the rotation lever 14 rotates. When an arm 9 slides, along 6d of guide slots, shutter 6a prepared in the lamp box 100 slides (sliding), and opens vent holes 26a and 26b. The shutter 6 before sliding is maintaining the condition that an elastic body 8 closes vent holes 26a and 26b since it is energized ahead of the lamp box 100. That is, vent holes 26a and 26b are closed by the shutter 6 until lamp anchoring section covering is attached.

[0029] If it explains with reference to drawing and the lamp anchoring section covering 51 will be attached, as shown in drawing 7 and drawing 6 , rotation lever 14a will rotate by heights 13. Rotation lever 14b also rotates and an arm 9 is made to slide with rotation of rotation lever 14a. Shutter 6a is also slid because an arm 9 slides. By this, like the lamp box where the lamp box 100 in the condition that vent holes 26a and 26b were closed by shutter 6a is shown in drawing 4 , shutter 6a slides behind the lamp box 100, and vent holes 26a and 26b will be wide opened as shown in drawing 5 . In addition, if the lamp anchoring covering 51 is removed from a case 50, shutter 6a will slide in the direction of the front of a lamp box, and will plug up a vent hole with the energization force of an elastic body 8.

[0030] Thus, before the lamp anchoring section covering 52 is attached, the vent holes 26a and 26b in the condition of having been closed for insurance can be made to open wide by attaching the lamp anchoring section covering 52 in a case 50. that is, having plugged up the vent hole, before projector equipment was equipped with the lamp box — carrying out — an insurance condition — it can maintain — in addition — and after projector equipment is equipped with a lamp box, the vent hole for sending the wind for cooling at the time of lamp lighting can be made to open wide Thereby, according to opening and closing of lamp anchoring section covering, the shutter device which makes closing motion of a vent hole easy can be offered.

[0031] Gestalt 2. drawing 9 of operation is the part drawing showing a lamp cover, and drawing where drawing 9 (a) looked at the lamp cover from the transverse plane, drawing which looked at drawing 9 (b) from width, drawing which looked at drawing 9 (c) from the top, and drawing 9 (d) are drawings which looked at the Toride section prepared in the lamp cover upper part from back. Drawing 10 is drawing which looked at the lamp box in which the lamp cover was attached from three directions, and drawing where drawing 10 (a) looked at the lamp box from the top, drawing where drawing 10 (b) looked at the lamp box from the transverse plane, drawing where drawing 10 (c) looked at the lamp box from back, and drawing 10 (d) are the side elevations which looked at the lamp box from the side face. It constructs, and it is drawing and drawing 11 and 12 show drawing where the lamp cover (Toride) was attached in the lamp box 100 and where drawing 11 looked at the front view and drawing 12 looked at the lamp box from the top.
[0032] The Toride section grasped by the hand that 20 was prepared in the lamp cover and 21 was prepared in the upper part of a lamp cover 20 in drawing, A heights of the front face of a lamp cover mostly prepared in the central part, B heights by which 22 was prepared in 23 and 24 were prepared in the both sides of the A heights 22, C heights, The locking lever by which 25 was prepared in the lower part of a box 5, the elastic body with which 27 energizes a locking lever 25 to an one direction, When 28 is prepared in the box 5 of the lamp box 100 and a lamp cover 20 is inserted in a box 5, the lamp cover guide used as a guide and 29 are the rotation shafts which held the locking lever rotatable.
[0033] Drawing 13 , drawing showing the lamp box 100 where the case 50 was equipped with drawing 14 where a lamp cover 20 is attached in the box 5 of the lamp box 100, and the partial element Fig. where drawing 13 saw the partial element Fig. of a side face and drawing 12 from the rear face further are shown. Drawing 15 and drawing 16 are drawings showing the condition that the lamp cover 20 was removed from the box 5 of the lamp box 100 after a case 50 is equipped with lamp BOKUSSU 100, and drawing 13 shows the partial element Fig. of a side face, and the partial element Fig. which saw drawing 14 from the rear face. In drawing, the rotation lid which 30 is prepared in the base of a box 5, and the vent hole for letting the wind for cooling pass on a lamp 4 and 31 open or plug up a vent hole 30, and is held rotatable at the box 5, and 32 are elastic bodies which energize the rotation lid 31 to an one direction. In drawing 13 and 14, since the lamp cover 20 is attached in the box 5, the end of the rotation lid 31 is contacted, and the A heights 22 shown in drawing 11 overcome the energization force of an elastic body 32, and are rotating the rotation lid 31 in the direction of a vent hole 30. Therefore, the rotation lid 31 has plugged up the vent hole 30. In drawing 15 and 16, since the lamp cover 20 is removed from the box 5, the rotation lid 31 was energized in the direction which opens a lid with an elastic body 32, and it has opened the vent hole 30 wide.
[0034] Next, the actuation at the time of equipping projector equipment 1 with the lamp box 100 in which the lamp cover 20 is attached is explained. When the lamp box 100 is removed from projector equipment 1, the lamp cover 20 is attached. Moreover, the lamp cover 20 is attached also in the lamp box for exchange. Thus, a lamp box is in the condition that the lamp cover 20 was attached, when treated with a lamp box simple substance for insurance.
[0035] As mentioned above, although the lamp cover 20 is attached when the lamp box 100 is treated alone, the actuation which attaches a lamp cover 20 in the lamp box 100 is explained first here. As the lamp box 100 in the condition that the lamp cover is not attached is shown in drawing 3 and it is shown in drawing 3 (a), the shutter 6 is closed and has plugged up the vent hole. Moreover, as shown in drawing 3 (b), the locking levers 25a and 25b which carried out the L character mold are energized in the direction of an arrow head with the elastic body (for example, spring). Furthermore, the rotation lid 31 is opened wide.
[0036] A lamp cover 20 is attached in the lamp box 100 in such a condition. The lamp cover 20 has the covering section 24 which covers the front face of the lamp box 100. In order to attach a lamp cover 20 in the lamp box 100, it is made to slide so that this covering section 29 may be made to meet the front face of the lamp box 100, and the inside of the lamp cover guide 28 is let pass and attached. If the lamp cover is made to slide, the A heights 22 prepared the lower side of the covering section 35 of a lamp cover 100 contact the fixed-end side of the rotation lid 31, rotate the rotation lid 31, and will be closed by the lid. In the condition that the lamp cover is not

insurance. Moreover, if the lamp cover 20 is attached in the lamp box 100, since the C heights 24 would be inserted in the hole 10 of Shutters 6a and 6b, and the spill port section 16 and will have fitted in, closing motion of a shutter 6 can be locked.

[0042] Gestalt 3. drawing 18 of operation is the partial element Fig. showing the configuration of the detection switch which detects the rotation lever of projector equipment and rotation by the gestalt 2 of implementation of this invention. In drawing, 40 is a detection switch, and it is arranged so that a switch may operate and detect in the location which was attached in the lamp anchoring section covering 51 and where it pushed and the heights 13 of a sheet metal 45 carried out specified quantity rotation of the rotation lever 14.

[0043] After projector equipment 1 is equipped with the lamp box 1 and a lamp cover 1 is removed, the lamp anchoring section covering 51 is inserted in a case 50 (see the drawing 18 a). By inserting the lamp anchoring section covering 51 in a case 50, heights 13 contact rotation lever 14a, and only the specified quantity rotates a rotation lever in the direction of an arrow head (see the drawing 18 b). By the way, since the detection switch is formed in the location where a detection switch serves as ON when a rotation lever carries out specified quantity rotation, it can know that lamp anchoring section covering was certainly attached in projector equipment 1 (case 50) by detecting that this detection switch was turned on. And when this detection switch 40 serves as ON, projector equipment is set up so that the power source for turning on a lamp 4 can be switched on. It lights up [cannot make a lamp 4 turn on, and / where lamp anchoring section covering is attached imperfectly / a lamp] and is safe if lamp anchoring section covering is not completely attached by doing in this way.

[0044] Gestalt 4. drawing 19 of operation is the partial element Fig. showing the configuration of the detection switch which detects the slide edge of the shutter which you are made to slide by the rotation lever of the projector equipment by the gestalt 3 of implementation of this invention. In drawing, 41 is a detection switch, and when a shutter 6 carries out a specified quantity slide, it is turned on.

[0045] After projector equipment 1 is equipped with the lamp box 1 and a lamp cover 1 is removed, the lamp anchoring section covering 51 is inserted in a case 50 (see the drawing 19 a). By inserting the lamp anchoring section covering 51 in a case 50, heights 13 contact rotation lever 14a, and only the specified quantity rotates a rotation lever centering on the rotation shaft 17 in the direction of an arrow head. Furthermore rotation of rotation lever 14a is interlocked with, and rotation lever 14b also rotates. Although shutter 6a is energized in the direction opposite to an arrow head with the spring 8, since an arm 9 is pushed by rotation lever 14b by the bigger force than the energization force, shutter 6a is also slid in the direction of an arrow head. . (see the drawing 19 b).

[0046] By the way, since the detection switch has prepared the detection switch to the location become with ON when the arm 9 with which the lamp anchoring covering 51 was attached completely, specified quantity rotation was carried out and the rotation lever was prepared in shutter 6a carries out specified quantity migration, this detection switch can know that lamp anchoring section covering was certainly attached in projector equipment 1 (case 50) by detecting having been turned on. And when this detection switch 41 serves as ON, projector equipment is set up so that the power source for turning on a lamp 4 can be switched on. thus, a lamp 4 cannot be made to turn on, if a lamp 4 cannot be made to turn on, but shutter 6a will carry out a specified quantity slide and a vent hole will not be wide opened completely inconvenient by carrying out, when [a certain] shutter 6a does not carry out a specified quantity slide more even if lamp anchoring section covering is attached completely That is, in the imperfect condition, cooling of the lamp box 100 cannot make a lamp able to turn on, but can fully secure insurance.

[0047] Drawing showing the structure of lamp anchoring section covering of projector equipment according [gestalt 5. drawing 20 of operation] to the gestalt 4 of implementation of this invention and drawing 21 are drawings showing the direction which attaches lamp anchoring section covering in a case. In drawing, it attached in the lamp anchoring section covering 51, and was attached with the screw 46, the heights 13 which rotate the rotation lever 14 were formed, and 45 is forced, and is a sheet metal.

attached, as the lamp box 100 of drawing 16 shown in drawing seen from the bottom, the rotation lid 31 is in the condition of having been opened wide. The rotation lid 31 rotates centering on the rotation shaft 33, and is energized in the direction which opens a lid with an elastic body 32. Drawing 14 is what looked at the lamp box 100 in the condition that the lamp cover 20 was attached, from the bottom, and the rotation lid 31 is in the condition of having been closed, and has plugged up the vent hole 30 prepared in the inferior surface of tongue of the lamp box 100.

[0037] Moreover, two B heights 24 prepared in the both sides of the covering section 35 contact a locking lever 25, and rotate a locking lever 25 by the strong force rather than the energization force of an elastic body 27. Locking lever 25a rotates clockwise centering on the rotation shaft 29, and locking lever 25b rotates counterclockwise centering on the rotation shaft 29. It is the lamp box 100 where the condition that the lamp cover 20 was attached completely was shown in drawing 11 , and the rotation lid 31 is closed and locking levers 25a and 25b are rotated for it by the direction of an arrow head, respectively. Since the c heights 24 prepared in the lamp cover 20 are inserted in a hole 10, they cannot slide on a shutter 6 and are carrying out it. The covering section 20 covered the front face of a lamp, and has plugged up the clear aperture.

[0038] Thus, projector equipment 1 is equipped with the lamp box in the condition that the lamp cover 20 was attached. The handle section 21 is formed in the lamp cover 20 so that it may be easy to deal with a user. As shown in drawing 12 , the Toride section 20 of the lamp box 100 in the condition of having seen from the top is grasped and raised, and projector equipment 1 is equipped. It is drawing 12 which looked at the lamp box 100 with which projector equipment 1 was equipped from the side face. In this condition, since the lamp cover 20 is not removed yet, the front face of the lamp box 100 is in the condition that it is covered with the covering section 35, have also closed the rotation lid 31, and the vent hole 30 was also plugged up.

[0039] If projector equipment 1 is equipped with the lamp box 100, a lamp cover 20 will be removed next. The lamp cover 20 has fitted into both the hole 10 of shutter 6b prepared in the lamp box 100, a hole 10, and the spill port section 16 of shutter 6a in homotopic, and fixed maintenance is further carried out with the screw 18 at the box 5 of the lamp box 100. Therefore, a lamp cover 20 can be removed from the lamp box 100 by removing this screw 18. Drawing 15 showed the condition of having removed the screw 18 and having drawn out the lamp cover 20 up. Since A heights which were applying the force rotated in the direction which closes the rotation lid 31 by the cover of the front face of a lamp box being lost, and contacting the rotation lid 30 further by removing a lamp cover 20 separate from the rotation lid 31, the rotation lid 31 is opened and a vent hole 30 is opened wide. As a lamp box is shown in drawing 15 seen from the side face, and drawing 16 which saw from the bottom, the rotation lid 31 opens, and a vent hole 30 is opened wide.

[0040] Moreover, the B heights 23 which were applying the force which a locking lever 25 is made to rotate will also separate from a locking lever 25 by contacting similarly by a lamp cover 20 being removed. Therefore, it rotates in the direction energized with an elastic body 27, and locking levers 25a and 25b will be in the condition that it is shown in drawing 22 . Locking levers 25a and 25b will be in the condition of gearing in the lock receptacle section 55, and the lamp box 100 will be fixed to projector equipment 1 (case 50) by this.

[0041] Thus, since a locking lever 25 does not gear with the lock receptacle section 55 when having attached the lamp cover 20 in the lamp box 100 by removal of a lamp cover 20, since it was made to rotate a locking lever 25 (refer to drawing 11), it can remove to projector equipment freely. Furthermore, since a locking lever 25 gears with the lock receptacle section 55 and it is fixed to a case 50 when a lamp cover 20 is removed from the lamp box 100, it cannot remove. Therefore, in the condition that the lamp cover is not attached, since it is in the condition that the lamp cover is surely attached when a lamp box cannot be removed from projector equipment and it is removed, the lamp box 100 can be dealt with safely. If the lamp cover is not attached even if it is the lamp box only prepared for exchange, since a locking lever 25 does not change into the condition in which the lock receptacle section 55 and tabling are possible and wearing to projector equipment 1 becomes impossible, even if, even if it is a lamp box for exchange, it is necessary to attach a lamp cover 20, and it becomes possible to maintain

[0048] When a case 50 is equipped with the lamp anchoring section covering 51 so that drawing 21 may show, the kick plate gold 45 with push is attached so that it may be located in the lamp box 100 side. moreover, it is shown in drawing 20 — as — pushing — a sheet metal 45 — the lamp anchoring section covering 51 — the whole surface is covered mostly. This forcing sheet metal 45 interrupts the radiant heat from the lamp box 100 generated while projector equipment 1 is operating, and he is trying for heat not to get across to the lamp anchoring section covering 51. Moreover, since it has prepared by making heights 13 into this kick plate gold 45 with push and one, the heat from the lamp box which gets across to heights 13 through the rotation lever 14 can be made to radiate heat with the kick plate gold 45 with push which has covered the whole surface of the lamp anchoring section covering 45. This can prevent the unexpected situation of making the lamp anchoring section covering 45 transform with heat etc., when heights 13 push and it is prepared with another object in the sheet metal 45.

[0049] Gestalt 6. drawing 5 of operation, and 9 and 12 show and construct the structure which makes impossible [sliding] the shutter of the projector equipment by the gestalt 5 of implementation of this invention, and they are drawing and part drawing. When shutter 6a is located in the condition of drawing 5 , the C heights 24 of a lamp cover 20 are inserted in the place which is in the condition to which the hole 10 of shutter 6a and the spill port section 16 of shutter 6b were joined and it will be in the condition of drawing 12 , a shutter 6 is obstructed by the C heights 24 of a lamp cover 20, and it becomes impossible to slide on the field of said box 5.

[0050] Gestalt 7. drawing 22 of operation and 23 are drawings to which D heights formed in the electrode holder which fixes Toride of projector equipment and the lamp box by the gestalt 7 of implementation of this invention indicate the structure in which it interferes to be lamp anchoring section covering. These D heights 12 are the heights of height to the extent that it has a clearance slightly in contact with the kick plate gold with push in the rear face of lamp anchoring section covering, when the location of the normal of projector equipment is equipped with a lamp box and lamp anchoring section covering is attached from on that.

[0051] Drawing 22 shows the condition that the lamp cover 20 is attached to the box 5 of the lamp box 100. In the state of this drawing, since the lamp anchoring section covering 51 collides with the Toride section 21 of a lamp cover 20, it cannot be attached in the location of the normal of a case 50. Moreover, in drawing 23 , when the height location of the normal of a case 50 is not equipped with the box 5 of the lamp box 100, the D heights 12 become higher to the lamp anchoring section covering 51 side than the condition (the location of normal is equipped with said lamp box 100 for drawing 23) by which it is shown by drawing 23 . In that case, the lamp anchoring section covering 51 is not attached in the location of the normal of a case 50.

[0052] Thus, when a lamp cover 20 is attached in the lamp box 100, or when the location of the normal of the case 50 of projector equipment 1 is not equipped with the lamp box 100 even if the lamp cover 20 is removed, the lamp anchoring section covering 52 is attached in the location of the normal of a case 50. It can prevent turning on the power source of projector equipment 1 in the condition of having been imperfectly equipped with the lamp box 100, by this.

[0053] Gestalt 8. drawing 24 of operation and 25 are the partial element Figs. having shown the structure of opening and closing the vent hole for letting a wind pass on the lamp contained by the box in the lamp box in the projector equipment by the gestalt 8 of implementation of this invention. The first rotation lid arranged rotatable in order that 62 may open [the first vent hole and 61 may open and close the second vent hole, and] and close the first vent hole 60 in drawing in 60, The second rotation lid arranged rotatable in order that 63 may open and close the second vent hole 61, The first rotation shaft with which 64 supports the first rotation lid 62 rotatable, the second rotation shaft with which 65 supports the second rotation lid 63 rotatable, The first heights which 66 is prepared [heights] in a case 50 and carry out specified quantity rotation of the first rotation lid 62, the second heights which 67 is prepared [heights] in a case 50 and carry out specified quantity rotation of the second rotation lid 63, the box with which 70 contains a lamp 4, and 101 are lamp boxes.

[0054] In the state of drawing 24 , the first and second rotation lids 62 and 63 are energized with each elastic body (not shown) in the direction which always closes the first and the second vent

hole 60 and 61. If the case 50 of a set 1, i.e., projector equipment, is equipped with the lamp box 101 in the arrow-head 68 direction shown in drawing 24 , it will be in the condition which shows in drawing 25 . The first rotation lid 62 carries out specified quantity rotation in the direction which opens the first vent hole 60 centering on the first rotation shaft 64 by the first heights 66 prepared in the case 50. Moreover, the second rotation lid 63 carries out specified quantity rotation in the direction which opens the second vent hole 61 centering on the second rotation shaft 65 by the second heights 67 prepared in the case 50. Thus, the first and the second vent hole 60 and 61 will be in the condition of having been opened wide. When projector equipment 1 is equipped with the lamp box 101 by this, a rotation lid is rotated and a vent hole is wide opened by it. That is, since a rotation lid is in the condition of having always closed and the vent hole is also plugged up when dealt with only with a lamp box, insurance is secured and the thing of it can be carried out.

[0055]

[Effect of the Invention] According to the projector equipment concerning the 1st invention, in the condition before lamp anchoring section covering is attached in a case By the vent hole of the lamp box attached in the lamp anchoring section being in the condition of having been closed by the shutter means, and attaching lamp anchoring section covering in a case Since a vent hole is opened by sliding a shutter means by this rotation member when the heights prepared in the lamp anchoring section carry out specified quantity rotation of the rotation member Since the vent hole is plugged up even if a lamp should be damaged, when it equips with a lamp box Since the vent hole of a lamp box can be opened when it can prevent that the fragment of a lamp passes through a vent hole and jumps out besides a box and lamp anchoring section covering is attached in a case, it can become possible to let a wind pass to a lamp, and insurance can be operated.

[0056] Because according to the projector equipment concerning the 2nd invention the heights prepared in lamp anchoring covering contact the 1st rotation lever and rotate the 1st rotation lever Since it can interlock and the 2nd rotation lever which contacts a shutter means can be rotated, and the power told to the 1st rotation lever by attaching lamp anchoring section covering in a case is certainly slid on a shutter means, it is changeable into power.

[0057] Since the detection switch which detects rotation of a rotation lever in the location as for which the rotation member which slides a lamp on a shutter means to open the vent hole which lets a wind pass carried out specified quantity rotation has been arranged according to the projector equipment concerning the 3rd invention, it can check whether the rotation lever has rotated certainly and dependability can be raised.

[0058] Since the detection switch which detects sliding of a shutter in the location made [a shutter means to open the vent hole which lets a wind pass on a lamp] to carry out specified quantity sliding by rotation of a rotation member has been arranged according to the projector equipment concerning the 4th invention, it can check whether it is in the condition that the shutter slid certainly and the vent hole was fully opened wide, and dependability can be raised.

[0059] According to the projector equipment concerning the 5th invention, to lamp anchoring section covering Since it has the heights which turned to the lamp box side the edge of the sheet metal on a lamp anchoring section covering background attached so that the whole surface might be covered mostly, bent, and were formed A rotation member can be rotated and direct lamp anchoring section covering is not made to radiate the radiant heat from a lamp box further by attaching this lamp anchoring section covering in the case equipped also with the lamp box. Moreover, since heights are formed by bending the edge of a sheet metal, when heights contact a shutter means, heat can be radiated with the sheet metal in which the heat from the lamp box which gets across to a heights side was attached mostly the flesh-side side of lamp anchoring section covering on the whole surface.

[0060] While carrying out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case, and this lamp according to the projector equipment concerning the 6th invention The shutter means held possible [sliding] in order to be prepared in the box which has a vent hole for letting a wind pass, and the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in

the front lower part of a box and carried out fixed maintenance of the lamp, The lamp box which consists of a rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, When a lamp box is equipped with the field of the lamp box where the light for carrying out the enlarged display of the image is emitted by the case with a wrap lamp cover and the above-mentioned lamp cover is removed from a lamp box Since it has the lock receptacle section which gears with the above-mentioned lock member, in the condition that the lamp cover is not attached in the lamp box Since the lock receptacle section has geared with the lock member, a lamp box cannot be removed from a case, but it can prevent taking out a lamp besides a case in the unreserved condition, and insurance can be maintained.

[0061] By attaching or removing the lamp cover attached in a lamp box according to the projector equipment concerning the 7th invention Since the locking lever for fixing a lamp box to a case is rotated, it can engage with the lock receptacle section or engagement can be canceled Since the lock receptacle section has geared with the lock section where it could take out the lamp box from the inside of a case where a lamp cover is attached, and a lamp cover is removed A lamp box cannot be taken out from the inside of a case, but it can prevent taking out a lamp box besides a case, after the lamp has become unreserved, and insurance can be maintained.

[0062] If a lamp cover is attached in a lamp box, since a pawl-like member and the hole prepared in the shutter means will be engaged according to the projector equipment concerning the 8th invention, if sliding of a shutter means can be regulated and a lamp cover is not removed, a shutter means does not slide.

[0063] According to the projector equipment concerning the 9th invention, a lamp cover It has the Toride section prepared in the front face of a box in the form where the upper part of a wrap covering part and the up back of a box are connected. This Toride section Since it is in a location higher than the top face of a case when the lamp anchoring section is equipped with a lamp box If a lamp cover is not removed, since lamp anchoring section covering cannot be attached in a case, it can prevent projector equipment operating in the condition [that a lamp cover is attached].

[0064] The lamp box which consists of a box for carrying out fixed maintenance of the lamp which emits the light for displaying a case and an image, and this lamp according to the projector equipment concerning the 10th invention and with which the lamp anchoring section in a case is equipped, When it is prepared in lamp anchoring section covering attached by the above-mentioned case and the top face of the above-mentioned box and the above-mentioned lamp anchoring section covering is attached in a wrap sake at a case, the lamp anchoring section in the above-mentioned case Since it had the electrode holder which has the 4th heights formed in height to the extent that the field located in the background of the above-mentioned lamp anchoring section is touched mostly When the location of the normal in a case is not equipped with the lamp box Even if it is going to attach lamp anchoring section covering in a case, in the 4th heights If it cannot attach in a case certainly, section covering cannot be attached and a lamp box does not equip the location of normal correctly, projector equipment cannot be operated and insurance can be maintained.

[0065] While carrying out fixed maintenance of the lamp which emits the light for displaying a case and an image, and this lamp according to the projector equipment concerning the 11th invention In the box which has a vent hole for letting a wind pass, and the field of this box While being energized in the direction which closes a vent hole with an elastic body, to the lamp box which consists of a rotation lid formed rotatable, and a case Since the height which a rotation lid is contacted [height] and carries out specified quantity rotation of the rotation lid is prepared when equipped with the above-mentioned lamp box Usually, since the rotation lid is closed even if it can open the vent hole in the condition of having closed, by equipping a case with a lamp box and the lamp box is further removed from projector equipment Since a rotation lid is rotated and a vent hole can be opened when insurance can be maintained and it is attached in projector equipment, even if a lamp should be damaged, when the lamp box is removed from projector equipment, insurance can be operated.

[0066] While the lamp box concerning the 12th invention carries out fixed maintenance of the

lamp which emits the light for carrying out the enlarged display of the image, and this lamp The box which has a vent hole for letting a wind pass, and the shutter means held possible [sliding] in order to be prepared in the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, The hole prepared in the sliding start edge side of the above-mentioned shutter means, and the whole front face of the above-mentioned box The wrap covering section, The 1st heights which make it rotate in the direction which is established in the lower limit of the covering section, contacts the above-mentioned rotation lid, and closes a rotation lid, The 2nd heights which it is prepared [heights] in the lower limit of the covering section, and the above-mentioned lock member is contacted [heights], and rotate a lock member in the predetermined direction, Since the end was prepared above the pawl-like member which engages with the hole which was prepared above the covering section and prepared in the above-mentioned shutter means, and the covering section and the other end is equipped with the lamp cover which consists of the Toride section attached in the back part of a box Since a lamp box can maintain the field which emits light at the condition of having been covered with the lamp cover while plugging up the vent hole prepared in the lamp box, it can be dealt with safely.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the lamp box with which the projector equipment and projector equipment which carry out expansion projection of the image with the light of the light source are equipped and which generates the light of the light source.

[Translation done.]

* NOTICES *

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PRIOR ART

[Description of the Prior Art] Discharge lamps, such as a metal halide lamp, are used for the light source of conventional projector equipment. Since it is an article of consumption, while continuing using projector equipment, it will be necessary to exchange this lamp. About this lamp, various devices are given also from the former, for example, that part can be seen to JP,3-62387,U, JP,5-38645,U, JP,8-314011,A, etc.
[0003] Drawing 26 is process drawing which is shown in JP,5-38645,U and in which showing the process which takes out the conventional lamp box from a liquid crystal projector. As shown in drawing 26 , the stowage 220 for containing lamp box 100X is established in the case 200 of projector equipment 1. When projector equipment 1 is usually used, a case 200 is equipped with lamp box 100X, and the stowage 220 of a case 200 is carried out in the lid with the design covering 210. In order to carry out air cooling of the lamp box 100X, the cooling fan 270 is stored in the stowage 220 together with lamp box 100X. In order to miss outside the wind which blows off from a cooling fan 270, the exhaust port 211 is established in the design covering 210.
[0004] Lamp box 100X is constituted so that it can remove from a case 200 for the exchange. When removing lamp box 100X, as shown in drawing 26 (a), the design covering 210 is removed first. Next, as shown in drawing 26 (b), a cooling fan 270 is moved to the sense of an arrow head 230 so that it may not become the obstacle of the ejection of lamp box 100X, and lamp box 100X is pulled out to the sense of an arrow head 240. Wearing of new lamp box 100X is performed by the procedure contrary to the procedure of above-mentioned removal.
[0005] Drawing 27 is the abbreviation sectional view showing the 1 configuration outline of projector equipment. The reflector 3 for condensing the light emitted from the metal halide lamp 2 and metal halide lamp 2 as the light source is contained by lamp box 100X. It is reflected by the cold mirror 250 and the light which came out of lamp box 100X is led to a dichroic mirror 251. The light which came out of the light source is decomposed into red and a green and blue light using two dichroic mirrors 251. The decomposed light passes the corresponding liquid crystal panel 253. In case it passes, the image information from which the light of three colors differs in each from the liquid crystal panel 253 of three sheets is given. The light of three colors which passed the liquid crystal panel 253 is compounded with a dichroic mirror 254. The compounded light carries out expansion projection of the image through the projection lens 260 at a screen (illustration abbreviation). Between a metal halide lamp 2 and a projector lens 260, a total reflection mirror 252,255 etc. is formed for modification of an optical path. During lamp lighting, in order to cool a metal halide lamp 2, the cooling fan 270 operated and the wind is generated. This wind takes heat from these through the side of a metal halide lamp 2 and a reflector 3, and is discharged besides projector equipment 1 from an exhaust port 211 through a cooling fan 270 from vent hole 26X (refer to drawing 26 (b)) of lamp box 100X.

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Invention] In the projector equipment of the 1st invention, in the condition before lamp anchoring section covering is attached in a case By the vent hole of the lamp box attached in the lamp anchoring section being in the condition of having been closed by the shutter means, and attaching lamp anchoring section covering in a case When the heights prepared in the lamp anchoring section carry out specified quantity rotation of the rotation member, a vent hole is opened by sliding a shutter means by this rotation member. Therefore, since the vent hole of a lamp box can be opened when it can prevent that the fragment of a lamp passes through a vent hole and jumps out besides a box since the vent hole is plugged up even if a lamp should be damaged, when it equips with a lamp box and lamp anchoring section covering is attached in a case, it can become possible to let a wind pass to a lamp, and insurance can be operated.
[0056] In the projector equipment of the 2nd invention, the 1st rotation lever is contacted, and by rotating the 1st rotation lever, the heights prepared in lamp anchoring covering can interlock, and can rotate the 2nd rotation lever which contacts a shutter means. Therefore, since the power told to the 1st rotation lever by attaching lamp anchoring section covering in a case is certainly slid on a shutter means, it is changeable into power.
[0057] Since the detection switch which detects rotation of a rotation lever in the location as for which the rotation member which slides a lamp on a shutter means to open the vent hole which lets a wind pass carried out specified quantity rotation has been arranged according to the projector equipment concerning the 3rd invention, it can check whether the rotation lever has rotated certainly and dependability can be raised.
[0058] Since the detection switch which detects sliding of a shutter in the location made [a shutter means to open the vent hole which lets a wind pass on a lamp] to carry out specified quantity sliding by rotation of a rotation member has been arranged according to the projector equipment concerning the 4th invention, it can check whether it is in the condition that the shutter slid certainly and the vent hole was fully opened wide, and dependability can be raised.
[0059] In the projector equipment of the 5th invention, it has the heights which turned to the lamp box side the edge of the sheet metal on a lamp anchoring section covering background attached so that the whole surface might be covered mostly, bent, and were formed to lamp anchoring section covering. Therefore, a rotation member can be rotated and direct lamp anchoring section covering is not made to radiate the radiant heat from a lamp box further by attaching this lamp anchoring section covering in the case equipped also with the lamp box. Moreover, since heights are formed by bending the edge of a sheet metal, when heights contact a shutter means, heat can be radiated with the sheet metal in which the heat from the lamp box which gets across to a heights side was attached mostly the flesh-side side of lamp anchoring section covering on the whole surface.
[0060] While carrying out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case in the projector equipment of the 6th invention, and this lamp The shutter means held possible [sliding] in order to be prepared in the box which has a vent hole for letting a wind pass, and the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The lamp box which consists of a rotation

lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, When a lamp box is equipped with the field of the lamp box where the light for carrying out the enlarged display of the image is emitted by the case with a wrap lamp cover and the above-mentioned lamp cover is removed from a lamp box, it has the lock receptacle section which gears with the above-mentioned lock member. Therefore, in the condition that the lamp cover is not attached in the lamp box, since the lock receptacle section has geared with the lock member, a lamp box cannot be removed from a case, but it can prevent taking out a lamp besides a case in the unreserved condition, and insurance can be maintained.

[0061] In the projector equipment of the 7th invention, by attaching or removing the lamp cover attached in a lamp box, the locking lever for fixing a lamp box to a case is rotated, it can engage with the lock receptacle section, or engagement can be canceled. Therefore, since the lock receptacle section has geared with the lock section where it could take out the lamp box from the inside of a case where a lamp cover is attached, and a lamp cover is removed, a lamp box cannot be taken out from the inside of a case, but it can prevent taking out a lamp box besides a case, after the lamp has become unreserved, and insurance can be maintained.

[0062] If a lamp cover is attached in a lamp box, since a pawl-like member and the hole prepared in the shutter means will be engaged according to the projector equipment concerning the 8th invention, if sliding of a shutter means can be regulated and a lamp cover is not removed, a shutter means does not slide.

[0063] In the projector equipment of the 9th invention, a lamp cover has the Toride section prepared in the front face of a box in the form where the upper part of a wrap covering part and the up back of a box are connected, and this Toride section is in a location higher than the top face of a case, when the lamp anchoring section is equipped with a lamp box. Therefore, if a lamp cover is not removed, since lamp anchoring section covering cannot be attached in a case, it can prevent projector equipment operating in the condition [that a lamp cover is attached].

[0064] The lamp box which consists of a box for carrying out fixed maintenance of the lamp which emits the light for displaying a case and an image in the projector equipment of the 10th invention, and this lamp and with which the lamp anchoring section in a case is equipped, When it is prepared in lamp anchoring section covering attached by the above-mentioned case and the top face of the above-mentioned box and the above-mentioned lamp anchoring section covering is attached in a wrap sake at a case, the lamp anchoring section in the above-mentioned case It had the electrode holder which has the 4th heights formed in height to the extent that the field located in the background of the above-mentioned lamp anchoring section is touched mostly. Therefore, if it cannot attach in a case certainly, section covering cannot be attached and a lamp box does not equip the location of normal correctly in the 4th heights even if it is going to attach lamp anchoring section covering in a case when the location of the normal in a case is not equipped with the lamp box, projector equipment cannot be operated and insurance can be maintained.

[0065] While carrying out fixed maintenance of the lamp which emits the light for displaying a case and an image in the projector equipment of the 11th invention, and this lamp In the box which has a vent hole for letting a wind pass, and the field of this box While being energized in the direction which closes a vent hole with an elastic body, when the lamp box which consists of a rotation lid formed rotatable, and a case are equipped with the above-mentioned lamp box, a rotation lid is contacted, and the height which carries out specified quantity rotation of the rotation lid is prepared. Therefore, since the rotation lid is closed even if it can open the vent hole in the condition of having usually closed, by equipping a case with a lamp box and the lamp box is further removed from projector equipment Since a rotation lid is rotated and a vent hole can be opened when insurance can be maintained and it is attached in projector equipment, even if a lamp should be damaged, when the lamp box is removed from projector equipment, insurance can be operated.

[0066] While carrying out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image in the lamp box of the 12th invention, and this lamp The box which has a vent hole for letting a wind pass, and the shutter means held possible [sliding] in

order to be prepared in the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, The hole prepared in the sliding start edge side of the above-mentioned shutter means, and the whole front face of the above-mentioned box The wrap covering section, The 1st heights which make it rotate in the direction which is established in the lower limit of the covering section, contacts the above-mentioned rotation lid, and closes a rotation lid, The 2nd heights which it is prepared [heights] in the lower limit of the covering section, and the above-mentioned lock member is contacted [heights], and rotate a lock member in the predetermined direction, The end was prepared above the pawl-like member which engages with the hole which was prepared above the covering section and prepared in the above-mentioned shutter means, and the covering section, and the other end is equipped with the lamp cover which consists of the Toride section attached in the back part of a box. Therefore, since a lamp box can maintain the field which emits light at the condition of having been covered with the lamp cover while plugging up the vent hole prepared in the lamp box, it can be dealt with safely.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Since the light source of conventional projector equipment is constituted including a discharge lamp with internal pressure high as mentioned above, the removal activity of a lamp box is restricted to the thing expert in the handling, and a technical problem will not be produced if the handling of a convention is carried out. However, for high-performance-izing, high brightness-ization of a lamp progresses, and a wattage is also large and it is in the inclination for internal pressure to also increase in recent years. When the handling besides a convention should be carried out and a lamp explodes, possibility that a fragment will disperse arises from a vent hole.
[0007] It was made in order that this invention may solve the above-mentioned trouble, and when lamp boxes, such as a lamp box in the condition were removed from projector equipment, and a lamp box for exchange, are taken out besides projector equipment, even if a lamp explodes, the fragment of a lamp aims at offering the lamp box and the projector equipment with which the fragment of a lamp does not disperse from the aperture which the vent hole of a lamp box and the light of a lamp leave.

[Translation done.]

MEANS

[Means for Solving the Problem] While the projector equipment concerning the 1st invention carries out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case, and this lamp The lamp box which is established in the box which has a vent hole for letting a wind pass, and the upper part of this box, and consists of a shutter means held possible [sliding] and which is attached in the lamp anchoring section in a case, When attached in the rotation member prepared in the case in the location which contacts the shutter means of the lamp box with which the lamp anchoring section of the above-mentioned case was equipped, and the lamp anchoring section of the above-mentioned case The above-mentioned rotation member prepared in the above-mentioned case is contacted, and it has lamp anchoring section covering which has the heights which make the specified quantity rotation of the above-mentioned rotation member carry out in the predetermined direction.
[0009] In the projector equipment concerning the 2nd invention, the heights prepared in lamp anchoring section covering contact, and a rotation member is equipped with the 1st rotation lever held rotatable and the 2nd rotation lever which is prepared in the location which contacts the above-mentioned shutter means, is interlocked with rotation of the 1st rotation lever, and rotates.
[0010] The projector equipment concerning the 3rd invention equips the rotation edge of a rotation member with the detection switch which detects that the rotation member carried out specified quantity rotation by the heights of lamp anchoring section covering.
[0011] The projector equipment concerning the 4th invention equips the sliding edge of a shutter means with the detection switch which detects that the above-mentioned shutter carried out specified quantity sliding by rotation of a rotation member.
[0012] the projector equipment concerning the 5th invention — setting — the heights of lamp anchoring section covering — **** of lamp anchoring section covering — it is formed by bending the edge of the sheet metal mostly attached in the whole.
[0013] While the projector equipment concerning the 6th invention carries out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image to a case, and this lamp The shutter means held possible [sliding] in order to be prepared in the box which has a vent hole for letting a wind pass, and the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The lamp box which consists of a rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, When a lamp box is equipped with the field of the lamp box where the light for carrying out the enlarged display of the image is emitted by the case with a wrap lamp cover and the above-mentioned lamp cover is removed from a lamp box, it has the lock receptacle section which gears with the above-mentioned lock member.
[0014] In the projector equipment concerning the 7th invention a lock member In order to consist of a locking lever attached rotatable after having been energized by the one direction with the elastic body in the front lower part of a box and to attach a lamp cover in the front face of a box The attachment member prepared in the box and a lamp cover While contacting the

edge by the side of the rotation shaft of the rotation lid which was formed in the lower limit of a lamp cover and formed in the box bottom It consists of the 1st heights which rotate the above-mentioned rotation lid, and the 2nd heights which rotate the above-mentioned locking lever while being prepared in the lower limit of a lamp cover and contacting the above-mentioned locking lever.

[0015] In the projector equipment concerning the 8th invention, a shutter means has a hole in the front-face side of a box, the front face of a box is established in a lamp cover above a wrap covering part, and it consists of a pawl-like member which engages with the above-mentioned hole.

[0016] In the projector equipment concerning the 9th invention, a lamp cover has the handle section prepared in the front face of a box in the form where the upper part of a wrap covering part and the up back of a box are connected, and this handle section is in a location higher than the top face of a case, when the lamp anchoring section is equipped with a lamp box.

[0017] The lamp box which consists of a box for carrying out fixed maintenance of the lamp which emits light for the projector equipment concerning the 10th invention to display a case and an image, and this lamp and with which the lamp anchoring section in a case is equipped, When it is prepared in lamp anchoring section covering attached by the above-mentioned case and the top face of the above-mentioned box and the above-mentioned lamp anchoring section covering is attached in a wrap sake at a case, the lamp anchoring section in the above-mentioned case It has the electrode holder which has the 4th heights formed in height to the extent that the field located in the background of the above-mentioned lamp anchoring section is touched mostly.

[0018] While the projector equipment concerning the 11th invention carries out fixed maintenance of the lamp which emits the light for displaying a case and an image, and this lamp In the box which has a vent hole for letting a wind pass, and the field of this box While being energized in the direction which closes a vent hole with an elastic body, when the lamp box which consists of a rotation lid formed rotatable, and a case are equipped with the above-mentioned lamp box, a rotation lid is contacted, and the height which carries out specified quantity rotation of the rotation lid is prepared.

[0019] While the lamp box concerning the 12th invention carries out fixed maintenance of the lamp which emits the light for carrying out the enlarged display of the image, and this lamp The box which has a vent hole for letting a wind pass, and the shutter means held possible [sliding] in order to be prepared in the upper part of this box and to open and close a vent hole, The lock member for fixing in a case the box which was prepared in the front lower part of a box and carried out fixed maintenance of the lamp, The rotation lid attached free [rotation] in order to open and close the vent hole prepared in the inferior surface of tongue of the box which carries out fixed maintenance of the lamp, The hole prepared in the sliding start edge side of the above-mentioned shutter means, and the whole front face of the above-mentioned box The wrap covering section, The 1st heights which make it rotate in the direction which is established in the lower limit of the covering section, contacts the above-mentioned rotation lid, and closes a rotation lid, The 2nd heights which it is prepared [heights] in the lower limit of the covering section, and the above-mentioned lock member is contacted [heights], and rotate a lock member in the predetermined direction, An end is prepared above the pawl-like member which engages with the hole which was prepared above the covering section and prepared in the above-mentioned shutter means, and the covering section, and the other end is equipped with the lamp cover which consists of the Toride section attached in the back part of a box.

[0020]

[Embodiment of the Invention] Gestalt 1. drawing 1 of operation shows and constructs the liquid crystal projector equipment by the gestalt 1 of implementation of this invention, and is drawing. For 1, as for a case and 51, projector equipment and 50 are [wrap lamp anchoring section covering and 52] projector lenses about the lamp anchoring section of projector equipment 1.

[0021] Drawing 2 is drawing showing the lamp used as the light source of projector equipment, and drawing where drawing 2 (a) looked at the lamp 4 from the transverse plane, drawing where drawing 2 (b) looked at the lamp 4 from the front, drawing where drawing 2 (c) looked at the lamp

4 from back, and drawing 2 (d) are side elevations. Drawing 3 is drawing which looked at the lamp box in the condition that the vent hole closed, from three directions, and drawing where drawing 3 (a) looked at the lamp box 3 from the transverse plane, drawing where drawing 3 (b) looked at the lamp box 3 from the front, and drawing 3 (c) are drawings which looked at the lamp box 3 from the side face. It is the assembly Fig. showing the lamp box in the condition that the vent hole for drawing 4 containing a lamp 4 and letting a wind pass on a lamp 4 is opened wide, and drawing 5 is the assembly Fig. showing the lamp box in the condition that the vent hole was plugged up.

[0022] In drawing, it is the reflector which reflects the light out of which 2 came out of from the metal halide lamp, and 3 came from the metal halide lamp 2 in the predetermined direction, and these are named generically and it considers as a lamp 4. The box with which 5 holds said lamp 4, and 6 are shutters, and consist of shutter 6a attached in the bottom of shutter 6b currently fixed to the box 5, and shutter 6b possible [sliding]. The guide pin 7 is attached in shutter 6a, and it is engaging with the guide slot of shutter 6b where this guide pin 7 was fixed to the box 5 with the shutter 6a up side. Shutter 6a is energized in the direction which always closes the vent holes 26a and 26b for being held possible [sliding] along a guide slot with a guide pin 7, and letting a wind pass on a lamp 4 with an elastic body 8 (it closes). 9 is the arm prepared in the shutter 6. The hole by which 10 was prepared in the shutter 6, and 11 are the electrode holders attached in the lamp box 100, and are equipped with the D heights 12. These D heights 12 are heights which have height to the extent that the rear face of lamp anchoring section covering is touched, when the location of the normal of projector equipment is equipped with a lamp box and lamp anchoring section covering is attached from on that. The lamp box 100 is fixed to a case 50 with this electrode holder 11. 16 is the spill port section which was able to be opened in the location which laps with the hole 10 prepared in said shutter 6 in the condition of having moved in the direction in which it is prepared in a box 5 and a shutter 6 plugs up vent holes 26a and 26b.

[0023] Drawing 6 is the important section enlarged drawing showing the rotation lever section which carries out rotation contact on the arm 7 of the shutter 6 which shows the lamp box 100 with which the case 50 of projector equipment 1 was equipped, and which constructs and is held possible [sliding] at drawing and the box 5 of the lamp box 100. Drawing 7 and drawing 8 A rotation lever rotates by the heights which were attached in the rear face of the lamp anchoring section covering 51 and which pushed and were prepared in the sheet metal. Before it is the element Fig. showing the structure which contacts the arm 7 of a shutter 6 and is rotated further and a rotation lever rotates drawing 7 , while drawing 8 shows the condition that only the specified quantity rotated, a rotation lever Arrangement of the detection switch which detects that the case 50 was equipped with the lamp anchoring section covering 51 is shown. In drawing, the elastic body with which the heights of a protruding piece configuration by which 45 was attached in the rear face of the lamp anchoring section covering 51, and in which it pushed against and a sheet metal and 13 were prepared at right angles to the edge of kick plate gold with push, and 14 energize the rotation lever 14 on a rotation lever, and 15 energizes it to an one direction, and 17 are the rotation shafts which held the rotation lever 14 rotatable. 39 is a switch which detects that the location of the normal of a case 50 was equipped with the lamp anchoring section covering 51, when a case 50 is equipped with the lamp anchoring section covering 51. Projector equipment 1 can switch on the power source for turning on a lamp 4, when this detection switch 39 is turned on.

[0024] Next, the actuation for equipping projector equipment 1 with the lamp box 100 is explained. The lamp box 100 is carrying out the gestalt as shown in drawing 3 , fixed maintenance of the lamp 4 is carried out with a box 5, and the shutter 6 which consists of a shutter device for opening wide the vent hole prepared in the box 5, or closing is formed in the upper part of a box 5. The arm 9 which transmits the power for sliding shutter 6a along a guide slot is formed in the right-hand side edge (refer to drawing 3 (a)) of shutter 6a. Here, these are named generically and it is considering as the lamp box 100. Guide pin 7a is attached in shutter 6a, and guide pin 7b consists of a height prepared in the box 5. Although the shutter 6 is formed in the box 5, fixed maintenance of the sliding of shutter 6a which constitutes a shutter 6 is enabled under shutter

6b.
[0025] Shutter 6a is attached in guide slot 6c prepared in shutter 6b by guide pin 7a attached in shutter 6a possible [sliding]. Furthermore, shutter 6a is attached possible [sliding] by guide slot 6c and guide pin 7b prepared in the box 5. And shutter 6b is attached in the box 5 in the location allotted to the shutter 6a bottom. Shutter 6b is inserted in the round hole by which guide pin 7b was prepared in shutter 6b, and guide pin 7a is further inserted in 6d of guide slots established in shutter 6b. Thus, with the shutter 6b down side which was fixed to the box 5 and attached, the elastic body 8 (for example, spring) attached in the end of shutter 6b which was fixed and was attached is attached also in shutter 6a, and shutter 6a is energized in the direction of a front face of a lamp box, and is held in the location which usually plugs up vent holes 26a and 26b while it is attached possible [sliding].
[0026] This lamp box 100 removes the lamp anchoring section covering 51 of the case 50 of projector equipment 1, and the lamp anchoring section is equipped with it. The condition of having removed the lamp anchoring covering 51 is shown in drawing 6 . However, drawing 6 is in the condition of already having been equipped with the lamp box.
[0027] Wearing of the lamp box 100 to projector equipment 1 is explained. As for the lamp box 100, the vent hole for cooling a lamp etc. will be closed by the condition of being removed from projector equipment 1, therefore the lamp cover is attached. A lamp cover will be explained in detail later and work of a shutter 6 is mainly explained here. As shown in drawing 6 , projector equipment 1 is equipped with the lamp box 100, and it is fixed to a case 50 with an electrode holder 11. The lamp cover mentioned later is removed at this time.
[0028] If a lamp box is equipped with projector equipment, the lamp anchoring section covering 51 will be attached from on the. When attached in projector equipment 1 at this lamp anchoring covering 51, heights 13 are formed in the location which contacts the rotation lever 14 prepared in the lamp box 100. The side of the heights 13 which touch the rotation lever 14 inclines, and when the rotation lever 14 contacts heights 13, the rotation lever 14 is rotated in the direction of an arrow head centering on the rotation shaft 17 (refer to drawing 7 and drawing 8). The rotation lever 14 which is in contact with the arm 9 of the lamp box 100 also interlocks, and is rotated, and an arm 9 is made to slide in the direction of an arrow head, when the rotation lever 14 rotates. When an arm 9 slides, along 6d of guide slots, shutter 6a prepared in the lamp box 100 slides (sliding), and opens vent holes 26a and 26b. The shutter 6 before sliding is maintaining the condition that an elastic body 8 closes vent holes 26a and 26b since it is energized ahead of the lamp box 100. That is, vent holes 26a and 26b are closed by the shutter 6 until lamp anchoring section covering is attached.
[0029] If it explains with reference to drawing and the lamp anchoring section covering 51 will be attached, as shown in drawing 7 and drawing 6 , rotation lever 14a will rotate by heights 13. Rotation lever 14b also rotates and an arm 9 is made to slide with rotation of rotation lever 14a. Shutter 6a is also slid because an arm 9 slides. By this, like the lamp box where the lamp box 100 in the condition that vent holes 26a and 26b were closed by shutter 6a is shown in drawing 4 , shutter 6a slides behind the lamp box 100, and vent holes 26a and 26b will be wide opened as shown in drawing 5 . In addition, if the lamp anchoring covering 51 is removed from a case 50, shutter 6a will slide in the direction of the front of a lamp box, and will plug up a vent hole with the energization force of an elastic body 8.
[0030] Thus, before the lamp anchoring section covering 52 is attached, the vent holes 26a and 26b in the condition of having been closed for insurance can be made to open wide by attaching the lamp anchoring section covering 52 in a case 50. that is, having plugged up the vent hole, before projector equipment was equipped with the lamp box — carrying out — an insurance condition — it can maintain — in addition — and after projector equipment is equipped with a lamp box, the vent hole for sending the wind for cooling at the time of lamp lighting can be made to open wide Thereby, according to opening and closing of lamp anchoring section covering, the shutter device which makes closing motion of a vent hole easy can be offered.
[0031] Gestalt 2. drawing 9 of operation is the part drawing showing a lamp cover, and drawing where drawing 9 (a) looked at the lamp cover from the transverse plane, drawing which looked at drawing 9 (b) from width, drawing which looked at drawing 9 (c) from the top, and drawing 9 (d)

are drawings which looked at the Toride section prepared in the lamp cover upper part from back. Drawing 10 is drawing which looked at the lamp box in which the lamp cover was attached from three directions, and drawing where drawing 10 (a) looked at the lamp box from the top, drawing where drawing 10 (b) looked at the lamp box from the transverse plane, drawing where drawing 10 (c) looked at the lamp box from back, and drawing 10 (d) are the side elevations which looked at the lamp box from the side face. It constructs, and it is drawing and drawing 11 and 12 show drawing where the lamp cover (Toride) was attached in the lamp box 100 and where drawing 11 looked at the front view and drawing 12 looked at the lamp box from the top.

[0032] The Toride section grasped by the hand that 20 was prepared in the lamp cover and 21 was prepared in the upper part of a lamp cover 20 in drawing, A heights of the front face of a lamp cover mostly prepared in the central part, B heights by which 22 was prepared in 23 and 24 were prepared in the both sides of the A heights 22, C heights, The locking lever by which 25 was prepared in the lower part of a box 5, the elastic body with which 27 energizes a locking lever 25 to an one direction, When 28 is prepared in the box 5 of the lamp box 100 and a lamp cover 20 is inserted in a box 5, the lamp cover guide used as a guide and 29 are the rotation shafts which held the locking lever rotatable.

[0033] Drawing 13 , drawing showing the lamp box 100 where the case 50 was equipped with drawing 14 where a lamp cover 20 is attached in the box 5 of the lamp box 100, and the partial element Fig. where drawing 13 saw the partial element Fig. of a side face and drawing 12 from the rear face further are shown. Drawing 15 and drawing 16 are drawings showing the condition that the lamp cover 20 was removed from the box 5 of the lamp box 100 after a case 50 is equipped with lamp BOKUSSU 100, and drawing 13 shows the partial element Fig. of a side face, and the partial element Fig. which saw drawing 14 from the rear face. In drawing, the rotation lid which 30 is prepared in the base of a box 5, and the vent hole for letting the wind for cooling pass on a lamp 4 and 31 open or plug up a vent hole 30, and is held rotatable at the box 5, and 32 are elastic bodies which energize the rotation lid 31 to an one direction. In drawing 13 and 14, since the lamp cover 20 is attached in the box 5, the end of the rotation lid 31 is contacted, and the A heights 22 shown in drawing 11 overcome the energization force of an elastic body 32, and are rotating the rotation lid 31 in the direction of a vent hole 30. Therefore, the rotation lid 31 has plugged up the vent hole 30. In drawing 15 and 16, since the lamp cover 20 is removed from the box 5, the rotation lid 31 was energized in the direction which opens a lid with an elastic body 32, and it has opened the vent hole 30 wide.

[0034] Next, the actuation at the time of equipping projector equipment 1 with the lamp box 100 in which the lamp cover 20 is attached is explained. When the lamp box 100 is removed from projector equipment 1, the lamp cover 20 is attached. Moreover, the lamp cover 20 is attached also in the lamp box for exchange. Thus, a lamp box is in the condition that the lamp cover 20 was attached, when treated with a lamp box simple substance for insurance.

[0035] As mentioned above, although the lamp cover 20 is attached when the lamp box 100 is treated alone, the actuation which attaches a lamp cover 20 in the lamp box 100 is explained first here. As the lamp box 100 in the condition that the lamp cover is not attached is shown in drawing 3 and it is shown in drawing 3 (a), the shutter 6 is closed and has plugged up the vent hole. Moreover, as shown in drawing 3 (b), the locking levers 25a and 25b which carried out the L character mold are energized in the direction of an arrow head with the elastic body (for example, spring). Furthermore, the rotation lid 31 is opened wide.

[0036] A lamp cover 20 is attached in the lamp box 100 in such a condition. The lamp cover 20 has the covering section 24 which covers the front face of the lamp box 100. In order to attach a lamp cover 20 in the lamp box 100, it is made to slide so that this covering section 29 may be made to meet the front face of the lamp box 100, and the inside of the lamp cover guide 28 is let pass and attached. If the lamp cover is made to slide, the A heights 22 prepared the lower side of the covering section 35 of a lamp cover 100 contact the fixed-end side of the rotation lid 31, rotate the rotation lid 31, and will be closed by the lid. In the condition that the lamp cover is not attached, as the lamp box 100 of drawing 16 shown in drawing seen from the bottom, the rotation lid 31 is in the condition of having been opened wide. The rotation lid 31 rotates centering on the rotation shaft 33, and is energized in the direction which opens a lid with an

elastic body 32. Drawing 14 is what looked at the lamp box 100 in the condition that the lamp cover 20 was attached, from the bottom, and the rotation lid 31 is in the condition of having been closed, and has plugged up the vent hole 30 prepared in the inferior surface of tongue of the lamp box 100.

[0037] Moreover, two B heights 24 prepared in the both sides of the covering section 35 contact a locking lever 25, and rotate a locking lever 25 by the strong force rather than the energization force of an elastic body 27. Locking lever 25a rotates clockwise centering on the rotation shaft 29, and locking lever 25b rotates counterclockwise centering on the rotation shaft 29. It is the lamp box 100 where the condition that the lamp cover 20 was attached completely was shown in drawing 11 , and the rotation lid 31 is closed and locking levers 25a and 25b are rotated for it by the direction of an arrow head, respectively. Since the c heights 24 prepared in the lamp cover 20 are inserted in a hole 10, they cannot slide on a shutter 6 and are carrying out it. The covering section 20 covered the front face of a lamp, and has plugged up the clear aperture.

[0038] Thus, projector equipment 1 is equipped with the lamp box in the condition that the lamp cover 20 was attached. The handle section 21 is formed in the lamp cover 20 so that it may be easy to deal with a user. As shown in drawing 12 , the Toride section 20 of the lamp box 100 in the condition of having seen from the top is grasped and raised, and projector equipment 1 is equipped. It is drawing 12 which looked at the lamp box 100 with which projector equipment 1 was equipped from the side face. In this condition, since the lamp cover 20 is not removed yet, the front face of the lamp box 100 is in the condition that it is covered with the covering section 35, have also closed the rotation lid 31, and the vent hole 30 was also plugged up.

[0039] If projector equipment 1 is equipped with the lamp box 100, a lamp cover 20 will be removed next. The lamp cover 20 has fitted into both the hole 10 of shutter 6b prepared in the lamp box 100, a hole 10, and the spill port section 16 of shutter 6a in homotopic, and fixed maintenance is further carried out with the screw 18 at the box 5 of the lamp box 100. Therefore, a lamp cover 20 can be removed from the lamp box 100 by removing this screw 18. Drawing 15 showed the condition of having removed the screw 18 and having drawn out the lamp cover 20 up. Since A heights which were applying the force rotated in the direction which closes the rotation lid 31 by the cover of the front face of a lamp box being lost, and contacting the rotation lid 30 further by removing a lamp cover 20 separate from the rotation lid 31, the rotation lid 31 is opened and a vent hole 30 is opened wide. As a lamp box is shown in drawing 15 seen from the side face, and drawing 16 which saw from the bottom, the rotation lid 31 opens, and a vent hole 30 is opened wide.

[0040] Moreover, the B heights 23 which were applying the force which a locking lever 25 is made to rotate will also separate from a locking lever 25 by contacting similarly by a lamp cover 20 being removed. Therefore, it rotates in the direction energized with an elastic body 27, and locking levers 25a and 25b will be in the condition that it is shown in drawing 22 . Locking levers 25a and 25b will be in the condition of gearing in the lock receptacle section 55, and the lamp box 100 will be fixed to projector equipment 1 (case 50) by this.

[0041] Thus, since a locking lever 25 does not gear with the lock receptacle section 55 when having attached the lamp cover 20 in the lamp box 100 by removal of a lamp cover 20, since it was made to rotate a locking lever 25 (refer to drawing 11), it can remove to projector equipment freely. Furthermore, since a locking lever 25 gears with the lock receptacle section 55 and it is fixed to a case 50 when a lamp cover 20 is removed from the lamp box 100, it cannot remove. Therefore, in the condition that the lamp cover is not attached, since it is in the condition that the lamp cover is surely attached when a lamp box cannot be removed from projector equipment and it is removed, the lamp box 100 can be dealt with safely. If the lamp cover is not attached even if it is the lamp box only prepared for exchange, since a locking lever 25 does not change into the condition in which the lock receptacle section 55 and tabling are possible and wearing to projector equipment 1 becomes impossible, even if, even if it is a lamp box for exchange, it is necessary to attach a lamp cover 20, and it becomes possible to maintain insurance. Moreover, if the lamp cover 20 is attached in the lamp box 100, since the C heights 24 would be inserted in the hole 10 of Shutters 6a and 6b, and the spill port section 16 and will have fitted in, closing motion of a shutter 6 can be locked.

[0042] Gestalt 3. drawing 18 of operation is the partial element Fig. showing the configuration of the detection switch which detects the rotation lever of projector equipment and rotation by the gestalt 2 of implementation of this invention. In drawing, 40 is a detection switch, and it is arranged so that a switch may operate and detect in the location which was attached in the lamp anchoring section covering 51 and where it pushed and the heights 13 of a sheet metal 45 carried out specified quantity rotation of the rotation lever 14.
[0043] After projector equipment 1 is equipped with the lamp box 1 and a lamp cover 1 is removed, the lamp anchoring section covering 51 is inserted in a case 50 (see the drawing 18 a). By inserting the lamp anchoring section covering 51 in a case 50, heights 13 contact rotation lever 14a, and only the specified quantity rotates a rotation lever in the direction of an arrow head (see the drawing 18 b). By the way, since the detection switch is formed in the location where a detection switch serves as ON when a rotation lever carries out specified quantity rotation, it can know that lamp anchoring section covering was certainly attached in projector equipment 1 (case 50) by detecting that this detection switch was turned on. And when this detection switch 40 serves as ON, projector equipment is set up so that the power source for turning on a lamp 4 can be switched on. It lights up [cannot make a lamp 4 turn on, and / where lamp anchoring section covering is attached imperfectly / a lamp] and is safe if lamp anchoring section covering is not completely attached by doing in this way.
[0044] Gestalt 4. drawing 19 of operation is the partial element Fig. showing the configuration of the detection switch which detects the slide edge of the shutter which you are made to slide by the rotation lever of the projector equipment by the gestalt 3 of implementation of this invention. In drawing, 41 is a detection switch, and when a shutter 6 carries out a specified quantity slide, it is turned on.
[0045] After projector equipment 1 is equipped with the lamp box 1 and a lamp cover 1 is removed, the lamp anchoring section covering 51 is inserted in a case 50 (see the drawing 19 a). By inserting the lamp anchoring section covering 51 in a case 50, heights 13 contact rotation lever 14a, and only the specified quantity rotates a rotation lever centering on the rotation shaft 17 in the direction of an arrow head. Furthermore rotation of rotation lever 14a is interlocked with, and rotation lever 14b also rotates. Although shutter 6a is energized in the direction opposite to an arrow head with the spring 8, since an arm 9 is pushed by rotation lever 14b by the bigger force than the energization force, shutter 6a is also slid in the direction of an arrow head. . (see the drawing 19 b).
[0046] By the way, since the detection switch has prepared the detection switch to the location become with ON when the arm 9 with which the lamp anchoring covering 51 was attached completely, specified quantity rotation was carried out and the rotation lever was prepared in shutter 6a carries out specified quantity migration, this detection switch can know that lamp anchoring section covering was certainly attached in projector equipment 1 (case 50) by detecting having been turned on. And when this detection switch 41 serves as ON, projector equipment is set up so that the power source for turning on a lamp 4 can be switched on. thus, a lamp 4 cannot be made to turn on, if a lamp 4 cannot be made to turn on, but shutter 6a will carry out a specified quantity slide and a vent hole will not be wide opened completely inconvenient by carrying out, when [a certain] shutter 6a does not carry out a specified quantity slide more even if lamp anchoring section covering is attached completely That is, in the imperfect condition, cooling of the lamp box 100 cannot make a lamp able to turn on, but can fully secure insurance.
[0047] Drawing showing the structure of lamp anchoring section covering of projector equipment according [gestalt 5. drawing 20 of operation] to the gestalt 4 of implementation of this invention and drawing 21 are drawings showing the direction which attaches lamp anchoring section covering in a case. In drawing, it attached in the lamp anchoring section covering 51, and was attached with the screw 46, the heights 13 which rotate the rotation lever 14 were formed, and 45 is forced, and is a sheet metal.
[0048] When a case 50 is equipped with the lamp anchoring section covering 51 so that drawing 21 may show, the kick plate gold 45 with push is attached so that it may be located in the lamp box 100 side. moreover, it is shown in drawing 20 — as — pushing — a sheet metal 45 — the

lamp anchoring section covering 51 -- the whole surface is covered mostly. This forcing sheet metal 45 interrupts the radiant heat from the lamp box 100 generated while projector equipment 1 is operating, and he is trying for heat not to get across to the lamp anchoring section covering 51. Moreover, since it has prepared by making heights 13 into this kick plate gold 45 with push and one, the heat from the lamp box which gets across to heights 13 through the rotation lever 14 can be made to radiate heat with the kick plate gold 45 with push which has covered the whole surface of the lamp anchoring section covering 45. This can prevent the unexpected situation of making the lamp anchoring section covering 45 transform with heat etc., when heights 13 push and it is prepared with another object in the sheet metal 45.

[0049] Gestalt 6. drawing 5 of operation, and 9 and 12 show and construct the structure which makes impossible [sliding] the shutter of the projector equipment by the gestalt 5 of implementation of this invention, and they are drawing and part drawing. When shutter 6a is located in the condition of drawing 5 , the C heights 24 of a lamp cover 20 are inserted in the place which is in the condition to which the hole 10 of shutter 6a and the spill port section 16 of shutter 6b were joined and it will be in the condition of drawing 12 , a shutter 6 is obstructed by the C heights 24 of a lamp cover 20, and it becomes impossible to slide on the field of said box 5.

[0050] Gestalt 7. drawing 22 of operation and 23 are drawings to which D heights formed in the electrode holder which fixes Toride of projector equipment and the lamp box by the gestalt 7 of implementation of this invention indicate the structure in which it interferes to be lamp anchoring section covering. These D heights 12 are the heights of height to the extent that it has a clearance slightly in contact with the kick plate gold with push in the rear face of lamp anchoring section covering, when the location of the normal of projector equipment is equipped with a lamp box and lamp anchoring section covering is attached from on that.

[0051] Drawing 22 shows the condition that the lamp cover 20 is attached to the box 5 of the lamp box 100. In the state of this drawing, since the lamp anchoring section covering 51 collides with the Toride section 21 of a lamp cover 20, it cannot be attached in the location of the normal of a case 50. Moreover, in drawing 23 , when the height location of the normal of a case 50 is not equipped with the box 5 of the lamp box 100, the D heights 12 become higher to the lamp anchoring section covering 51 side than the condition (the location of normal is equipped with said lamp box 100 for drawing 23) by which it is shown by drawing 23 . In that case, the lamp anchoring section covering 51 is not attached in the location of the normal of a case 50.

[0052] Thus, when a lamp cover 20 is attached in the lamp box 100, or when the location of the normal of the case 50 of projector equipment 1 is not equipped with the lamp box 100 even if the lamp cover 20 is removed, the lamp anchoring section covering 52 is attached in the location of the normal of a case 50. It can prevent turning on the power source of projector equipment 1 in the condition of having been imperfectly equipped with the lamp box 100, by this.

[0053] Gestalt 8. drawing 24 of operation and 25 are the partial element Figs. having shown the structure of opening and closing the vent hole for letting a wind pass on the lamp contained by the box in the lamp box in the projector equipment by the gestalt 8 of implementation of this invention. The first rotation lid arranged rotatable in order that 62 may open [the first vent hole and 61 may open and close the second vent hole, and] and close the first vent hole 60 in drawing in 60, The second rotation lid arranged rotatable in order that 63 may open and close the second vent hole 61, The first rotation shaft with which 64 supports the first rotation lid 62 rotatable, the second rotation shaft with which 65 supports the second rotation lid 63 rotatable, The first heights which 66 is prepared [heights] in a case 50 and carry out specified quantity rotation of the first rotation lid 62, the second heights which 67 is prepared [heights] in a case 50 and carry out specified quantity rotation of the second rotation lid 63, the box with which 70 contains a lamp 4, and 101 are lamp boxes.

[0054] In the state of drawing 24 , the first and second rotation lids 62 and 63 are energized with each elastic body (not shown) in the direction which always closes the first and the second vent hole 60 and 61. If the case 50 of a set 1, i.e., projector equipment, is equipped with the lamp box 101 in the arrow-head 68 direction shown in drawing 24 , it will be in the condition which shows in drawing 25 . The first rotation lid 62 carries out specified quantity rotation in the direction

which opens the first vent hole 60 centering on the first rotation shaft 64 by the first heights 66 prepared in the case 50. Moreover, the second rotation lid 63 carries out specified quantity rotation in the direction which opens the second vent hole 61 centering on the second rotation shaft 65 by the second heights 67 prepared in the case 50. Thus, the first and the second vent hole 60 and 61 will be in the condition of having been opened wide. When projector equipment 1 is equipped with the lamp box 101 by this, a rotation lid is rotated and a vent hole is wide opened by it. That is, since a rotation lid is in the condition of having always closed and the vent hole is also plugged up when dealt with only with a lamp box, insurance is secured and the thing of it can be carried out.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] Liquid crystal projector equipment is shown and constructed and it is drawing.
[Drawing 2] A lamp is shown and constructed and it is drawing.
[Drawing 3] It is drawing which looked at the lamp box from three directions.
[Drawing 4] A lamp box is seen and constructed from a top and it is drawing.
[Drawing 5] A lamp box is seen and constructed from a top and it is drawing.
[Drawing 6] Projector equipment is shown and constructed and they are drawing and an important section enlarged drawing.
[Drawing 7] It is the ******** Fig. of the rotation lever section.
[Drawing 8] It is the ******** Fig. of the rotation lever section.
[Drawing 9] It is drawing which looked at the lamp cover from four directions.
[Drawing 10] It is drawing which looked at the lamp box in which the lamp cover was attached from four directions.
[Drawing 11] It is the front view showing the lamp box in which the lamp cover was attached.
[Drawing 12] It is drawing which looked at the lamp box in which the lamp cover was attached from the top.
[Drawing 13] It is drawing showing the condition that the case was equipped with the lamp box.
[Drawing 14] It is drawing showing the rear face in the condition that the case was equipped with the lamp box.
[Drawing 15] It is drawing showing the condition that the case was equipped with the lamp box.
[Drawing 16] It is drawing showing the rear face in the condition that the case was equipped with the lamp box.
[Drawing 17] It is drawing showing the condition that the lamp cover was removed from the lamp box.
[Drawing 18] It is drawing showing the relation between a rotation lever and a detection switch.
[Drawing 19] It is drawing showing the relation between a shutter and a detection switch.
[Drawing 20] It is drawing showing lamp anchoring section covering.
[Drawing 21] The fragmentary sectional view showing signs that a case is equipped with lamp anchoring section covering.
[Drawing 22] Drawing showing signs that lamp anchoring section covering and the lamp cover attached in the lamp box interfere.
[Drawing 23] Drawing showing the condition of having equipped the case with the lamp box in which the electrode holder was prepared, and having attached lamp anchoring section covering.
[Drawing 24] It is drawing having shown opening and closing of the vent hole of a lamp box.
[Drawing 25] It is drawing having shown opening and closing of the vent hole of a lamp box.
[Drawing 26] It is drawing showing the process which removes the conventional lamp box from a case.
[Drawing 27] It is the abbreviation sectional view showing the configuration of conventional liquid crystal projector equipment.
[Description of Notations]
4 Lamp 5 Box 6 Shutter 8 Elastic Body, 9 Arm 10 Hole 11 Electrode Holder 12 D Heights, 13

Heights 14 Rotation Lever, 15 Elastic body 20 Toride, 22 A heights 23 B heights, 24 C heights, 25 Locking lever 26 Vent hole, 27 An elastic body, 28 Toride guide 30 Vent hole, 31 Rotation lid 32 An elastic body, 39 Detection switch, 40 Detection switch 41 A detection switch, 50 Case 51 Lamp anchoring section covering 55 The lock receptacle section, 70 Box 100 Lamp box 101 Lamp box.

[Translation done.]

* NOTICES *

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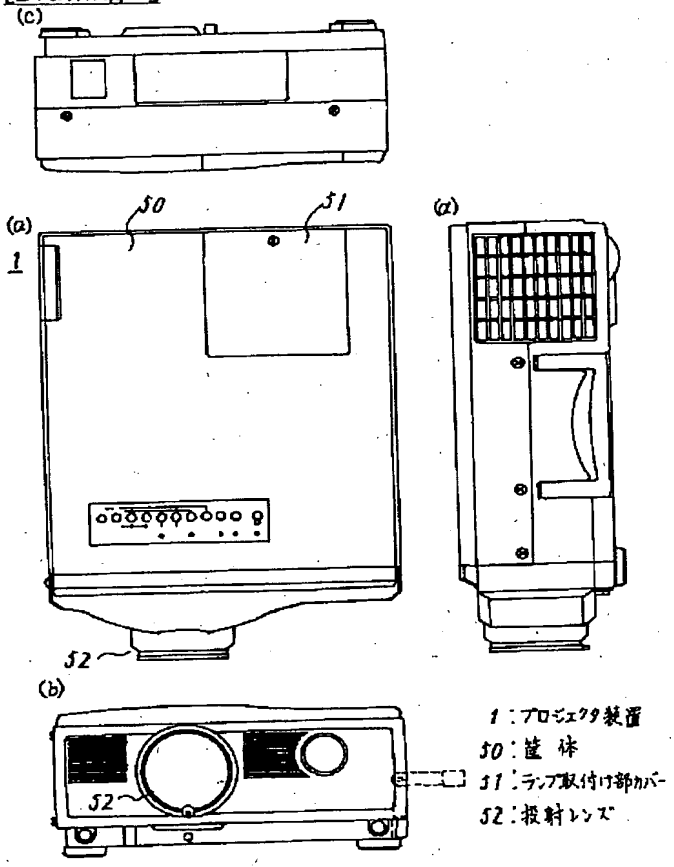
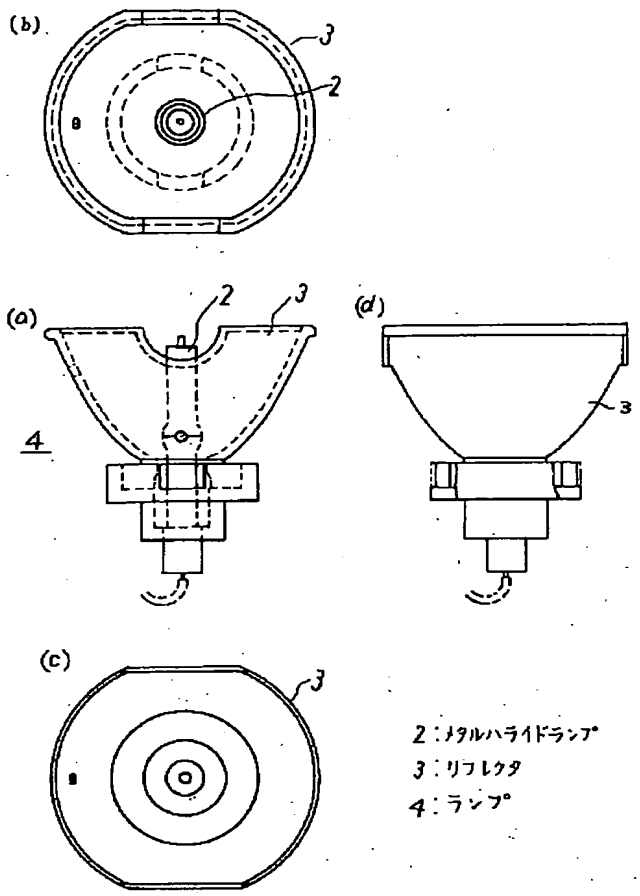
3.In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



[Drawing 2]



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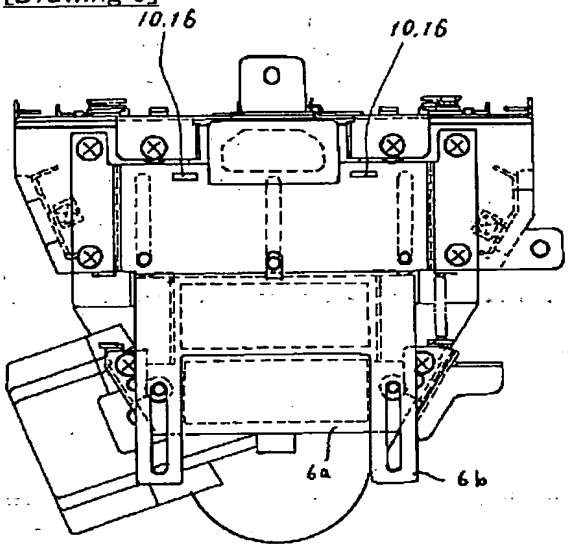

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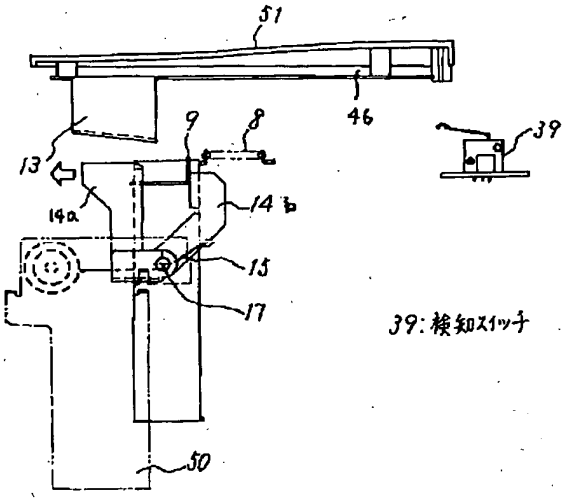

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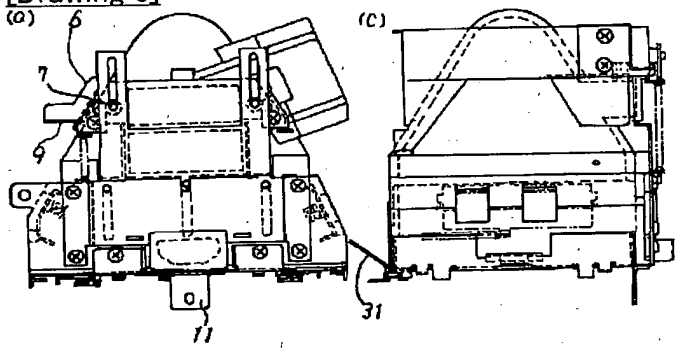

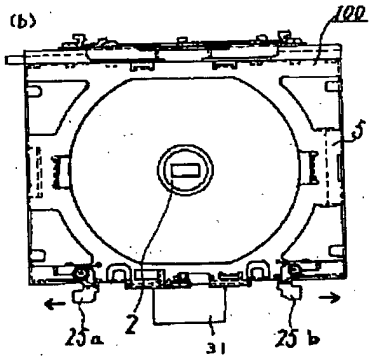

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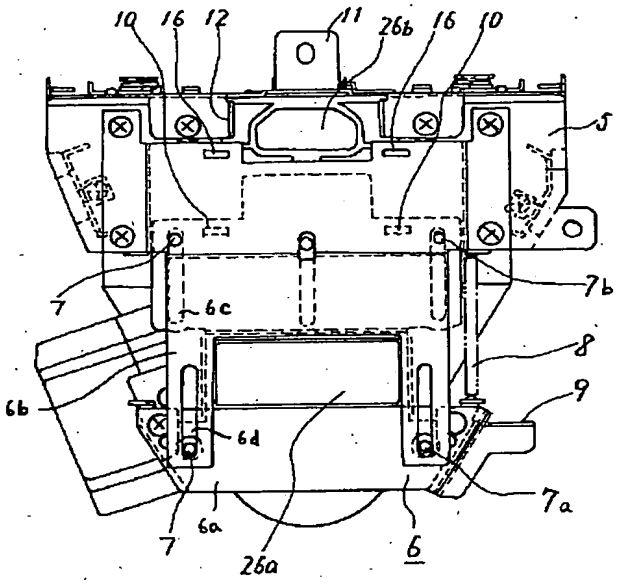
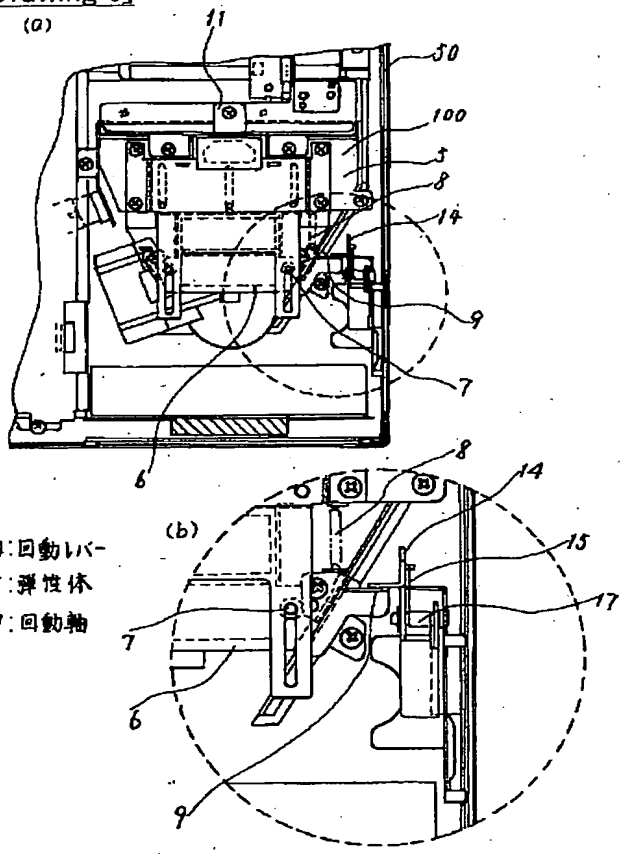


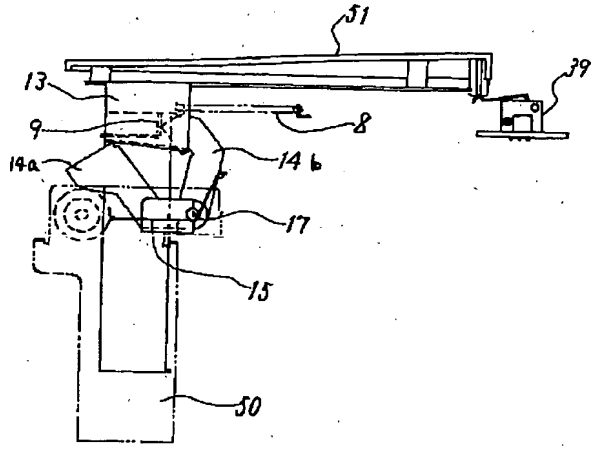
5：箱
6：シャッター
7：ガイドピン
8：弾性体
9：アーム
10：穴部
16：抜かし穴部
26a：通風口
26b：通風口

[Drawing 6]



14：回動レバー
15：弾性体
17：回動軸

[Drawing 8]



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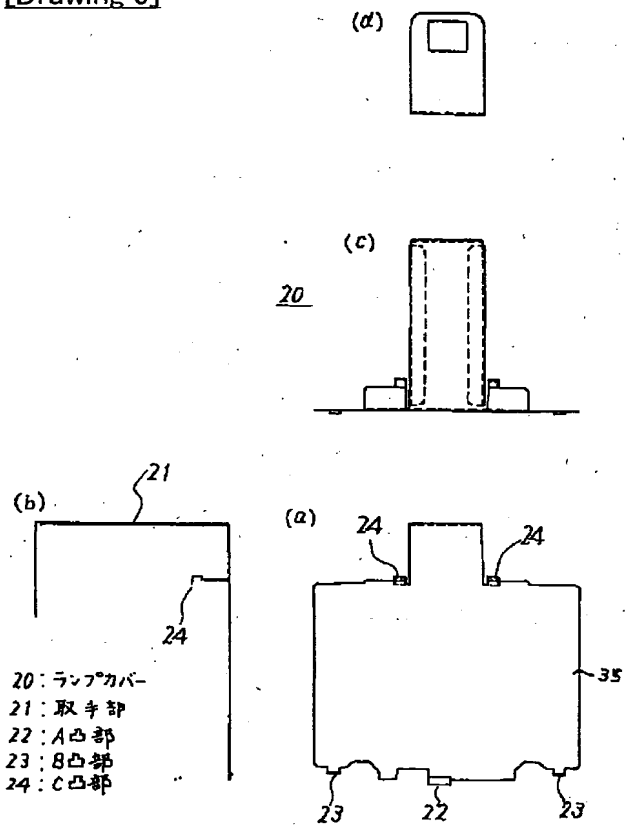
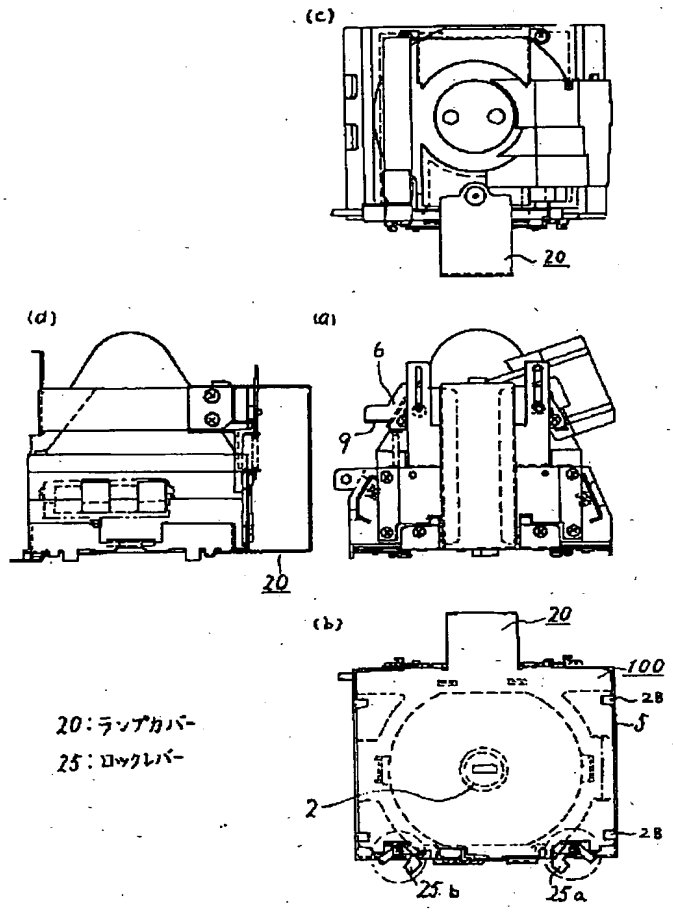


[Drawing 10]



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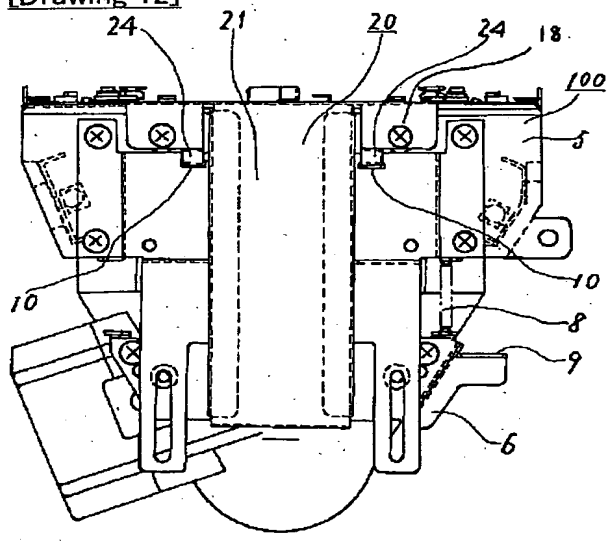
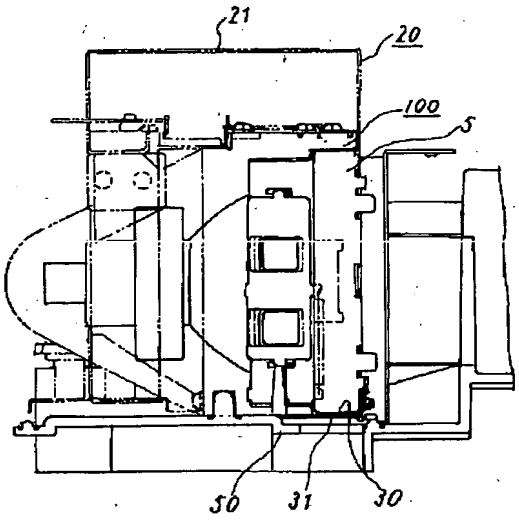
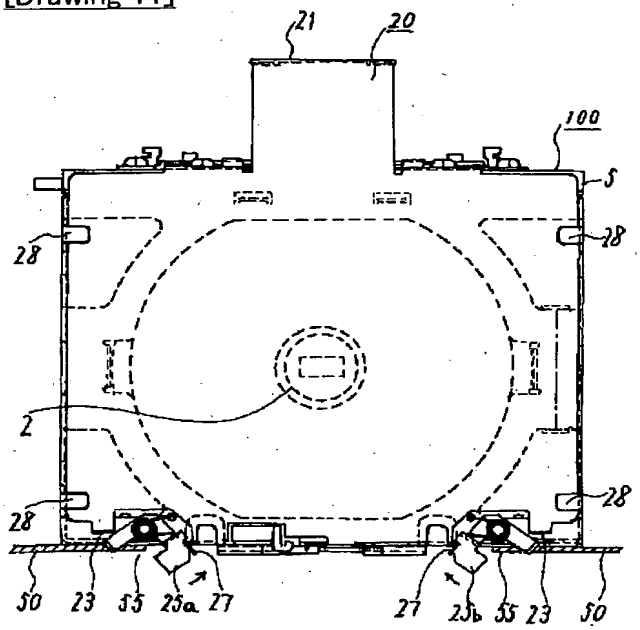


[Drawing 13]



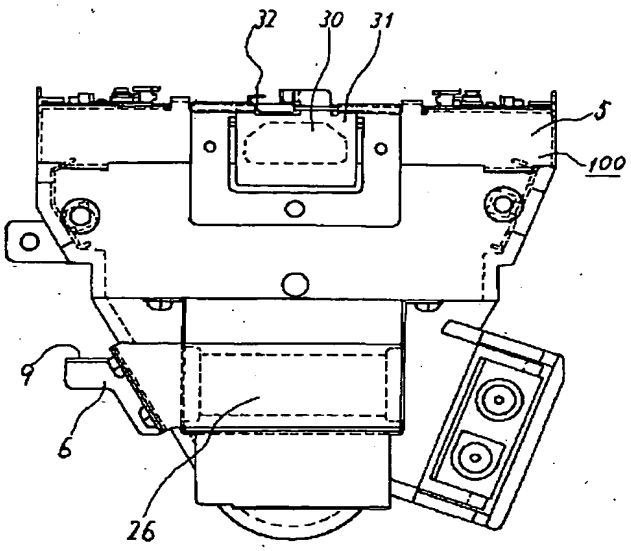
30：通風口
31：回動蓋

[Drawing 11]

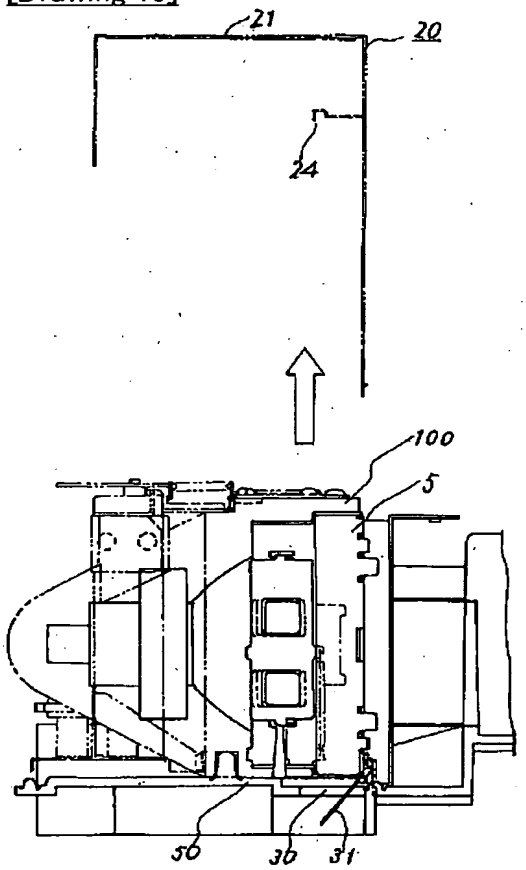


55：ロック受け部
27：弾性体
28：ランプカバーガイド
29：回動軸

[Drawing 14]



[Drawing 15]



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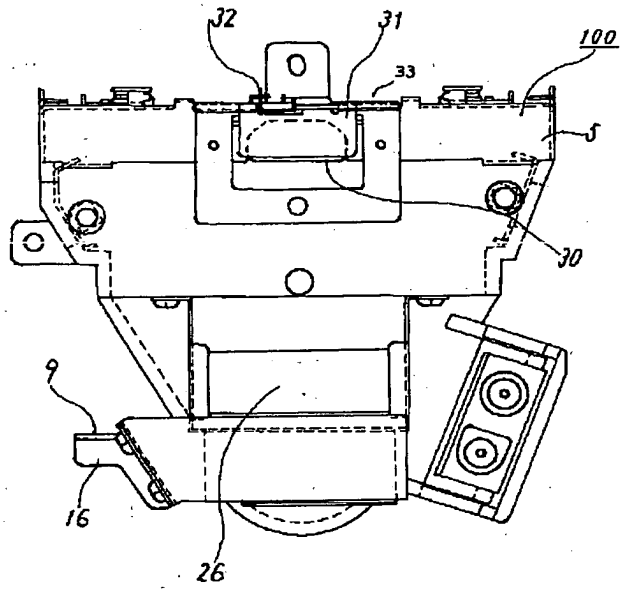

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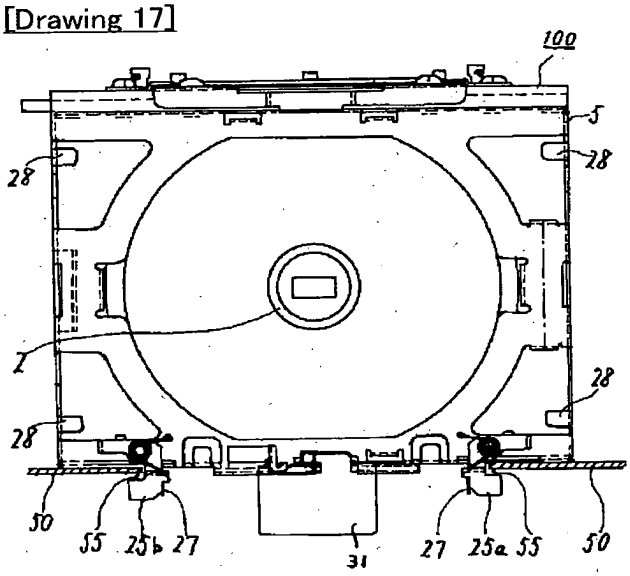
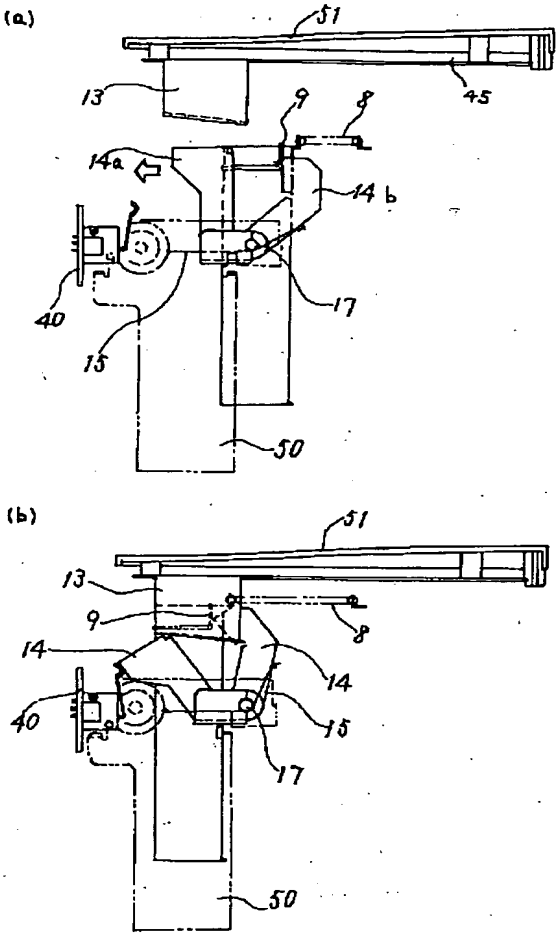


55：ロック受け部

[Drawing 18]



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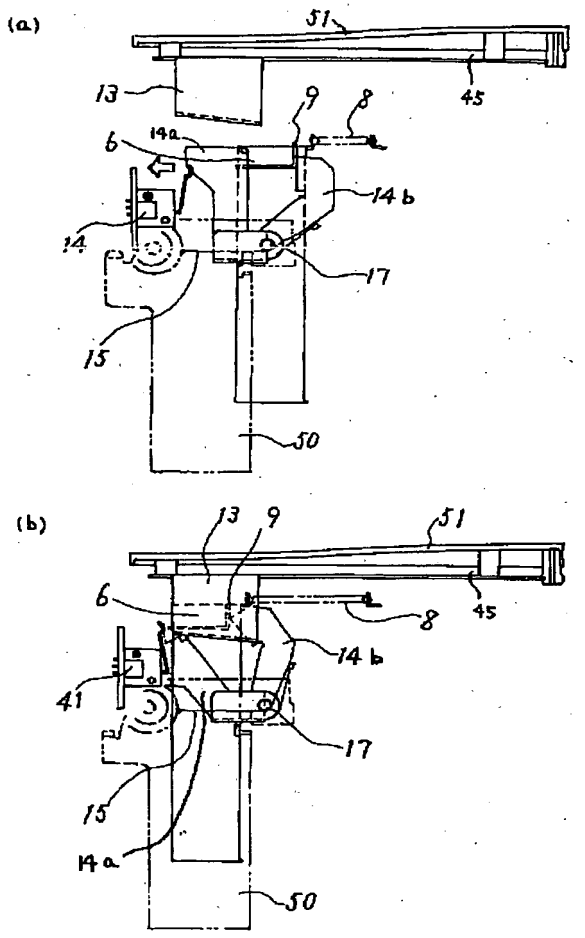

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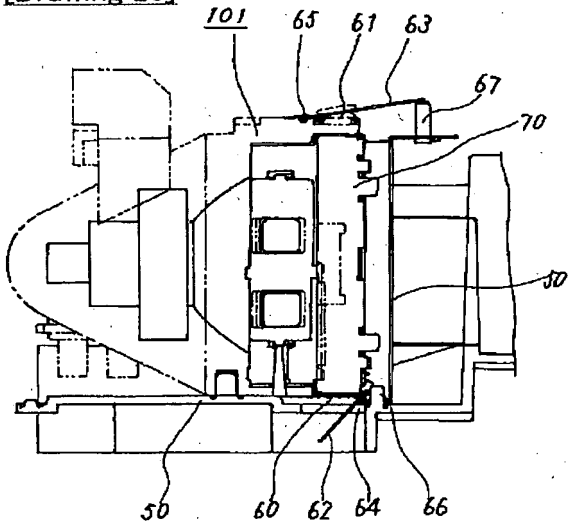

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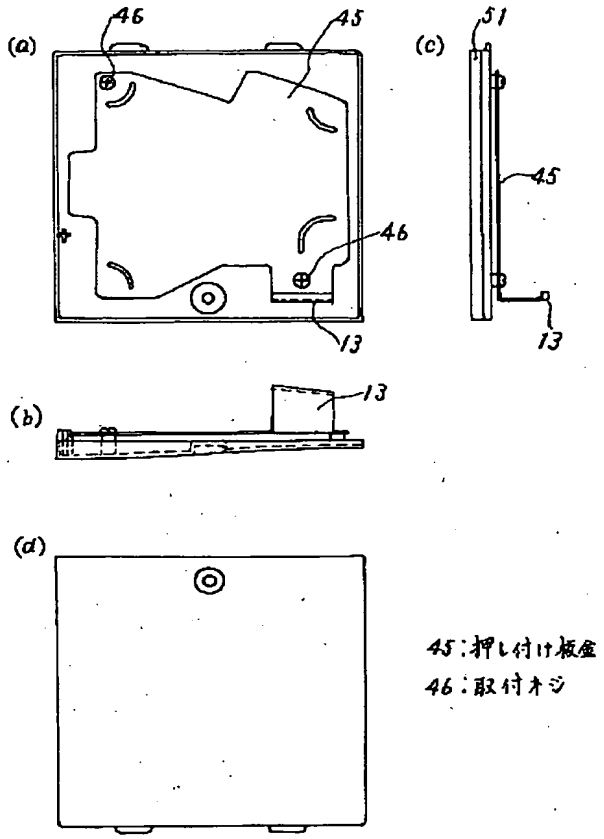

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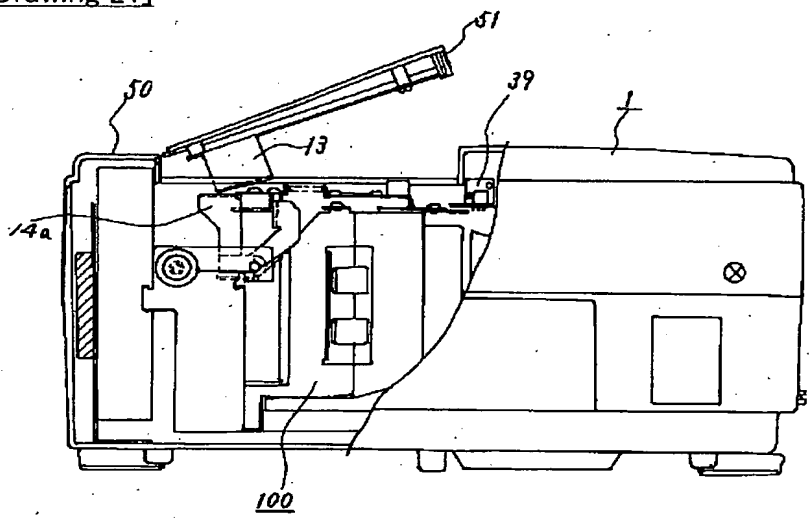

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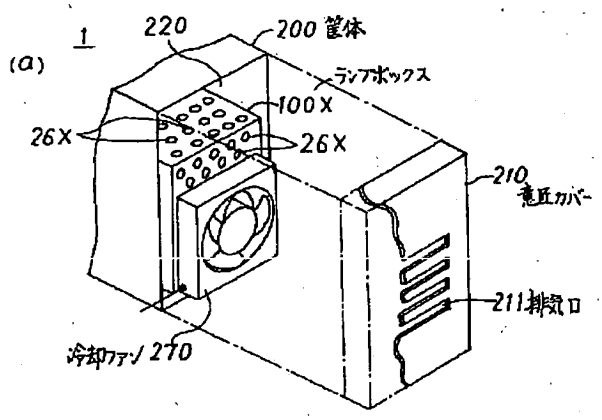
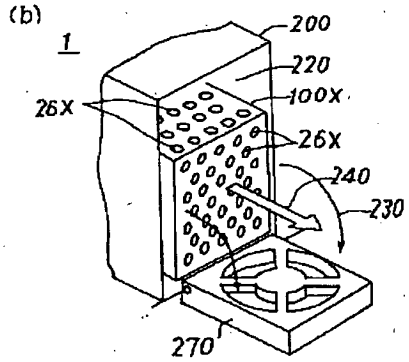
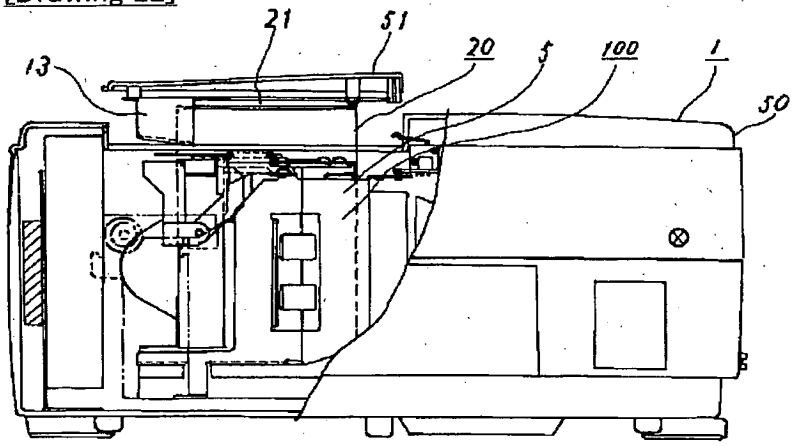




[Drawing 22]



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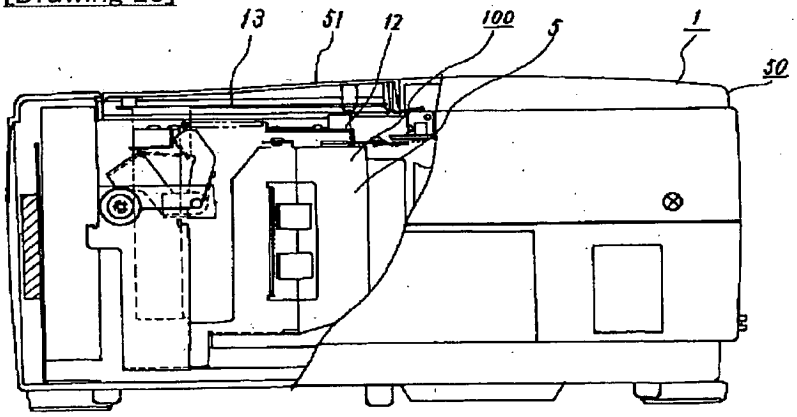

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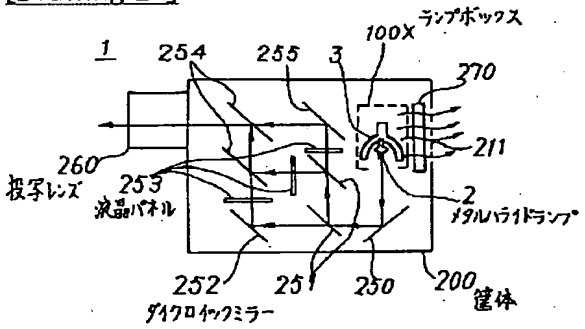

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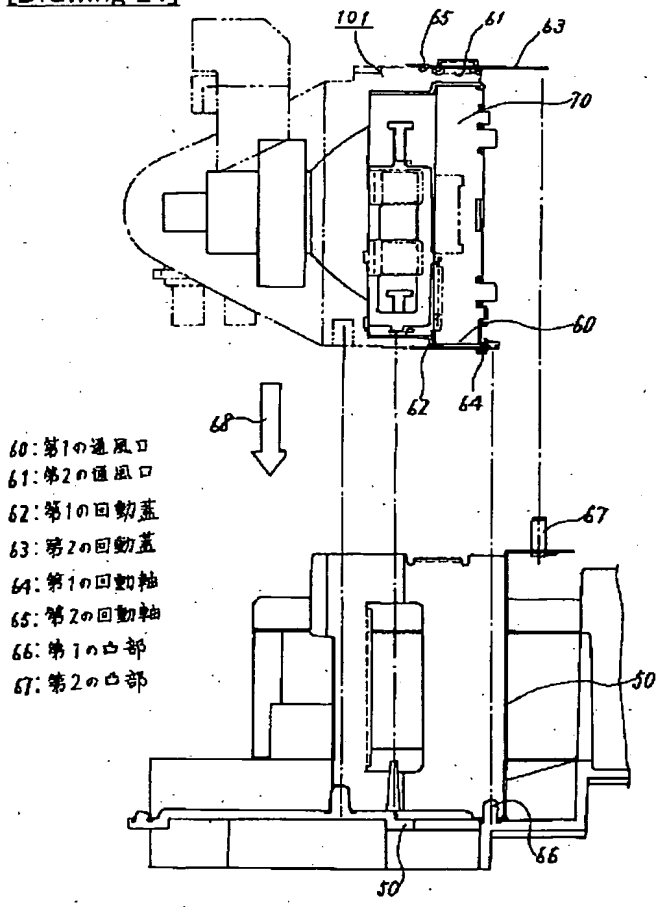

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